

PROJECTIVE TECHNIQUES

A DYNAMIC APPROACH
TO THE STUDY OF THE
PERSONALITY / / / / /

BY JOHN ELDERKIN BELL 
CLARK UNIVERSITY 



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PROJECTIVE TECHNIQUES

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INTRODUCTION

THE PURPOSE of this volume is fivefold. The first aim is to present a comprehensive review of the literature on projective techniques. Although they are, in many respects, only in the beginning stages of development, individual techniques have already been described in numerous articles and books. With some of them, the Rorschach Test being the best example, the literature that has been amassed is extensive and has already been reviewed exhaustively. No author has as yet published a detailed survey of the whole range of projective methods, although a number of shorter treatments of the field have appeared in journals, the first of which was by Symonds and Samuel¹ in 1941, and continued by Symonds and Krugman² in 1944. A fuller treatment of the subject, by Sargent,³ appeared in 1945.

The need for this present review is critical. Projective techniques have reached the point of development where it is obvious that no single one of their methods will ever provide the perfect instrument of diagnosis, although some of the earlier studies seemed to have been motivated by the goal of finding such, and the enthusiasts of some of the individual methods have been almost convinced that they had been successful in reaching that goal. One trend for the future of research with projectives appears to be in the application of a variety of procedures to individual cases for comparison of the respective merits of the techniques and for the selection of suitable batteries of them to meet the particular needs in a specific clinical situation. To facili-

¹ Symonds, P. M., and Samuel, E. A. Projective methods in the study of personality. *Rev. educ. Res.*, 11 (1941), 80-93.

² Symonds, P. M., and Krugman, M. Projective methods in the study of personality. *Rev. educ. Res.*, 14 (1944), 81-98. Also in *Rorschach Res. Exch.*, 9 (1945), 85-101.

³ Sargent, H. Projective methods: their origins, theory and application in personality research. *Psychol. Bull.*, 42 (1945), 257-93.

tate this research is the second aim of this volume. If research workers will be using a variety of these methods, it is my belief that they will find useful a volume which presents each of the techniques in sufficient detail at least to permit assumptions as to their respective merits. Such assumptions will help to provide a basis for future experimentation.

My intent, however, goes beyond simply offering the medium for such evaluations to the third purpose, the describing of each technique in some detail so that the volume may be used as an introductory manual for the administration, recording, and interpreting of many of the individual instruments. As such it is hoped it will be useful, not only to experimenters, but also to psychiatrists, psychologists, social workers, teachers, and others who must diagnose the individual personality or who must train students to use these methods. I recognize that this aim is more difficult to achieve than the others because of the uneven state of development of the individual methods. Thus the Rorschach method must be given much briefer treatment than its voluminous literature would dictate in order to compress it into the limits of this one volume, whereas other much less important methods, which cannot be described without devoting more space to them than would be proportionate to their value, must nevertheless be given such space. No apology is offered for such discrimination, because methodological treatments of some of the more widely used tests are readily available in their respective manuals, and condensation of these, such as the Rorschach manuals by Beck ⁴ and by Klopfer and Kelley,⁵ would be wasteful and of limited value. The difficulty of making this volume a manual for diagnosis is not purely an editorial one, however. It is far more a reflection of the status of the techniques themselves. Many of them are relatively no more than crude technical proposals; some of them have received no more than a preliminary application in diagnosis, more by nature of developing their method than of testing their value. Few have received the systematic refinement of technique that would make them valid and reliable instruments. Thus, they are

⁴ Beck, S. J. *Rorschach's test*. 2 vols. New York: Grune and Stratton, 1944.

⁵ Klopfer, B., and Kelley, D. M. *The Rorschach technique*. Yonkers, N. Y.: World Book Co., 1942.

not essentially ready for the status of "tests" and "manuals." Where this is true, the proposed methods and their applications are described in whatever detail is possible in order to meet the next, and fourth, purpose of the book.

It is hoped that this volume will serve as a stimulus and a help to psychologists and students in the more extensive application of projective techniques. If these are to attain the promise, which they apparently hold, of providing us with significant tools to use in the research laboratory, in the clinic, and in other situations for gaining insight into psychological processes, they must be experimented with, used with large numbers of subjects and with many clinical groups. They must be refined by controlling the conditions under which they are administered, by improving the administrative procedures, by revising and elaborating upon the interpretative schemes, and by proving their validity and reliability. That such efforts are more tedious and seemingly less original than the suggesting of new devices must be recognized, and yet must be undertaken willingly for the maximum development of each technique and for measuring its utility in revealing the hidden areas of the personality. It is suggested that the descriptions of the various psychological methods to follow may provide a cross-fertilization of ideas which will be mutually beneficial to each method. Even more important, however, may be the attempt to describe the theoretical foundations upon which the tests, as a whole and as individuals, rest. This theoretical discussion will not usually be singled out and labeled "Theory" but will be directly stated in many places and implied in many others. Projectives are of decidedly limited value in the hands of someone lacking a solid theoretical understanding of clinical psychology in general and the science of personality in particular. While this volume will not undertake the systematic presentation of theory involved in projective techniques, which must be accomplished soon in this science, it will review much theoretical material and refer the reader to sources where more detailed discussions of theory may be found. The student who wishes to gain competence in the use of these techniques will be well-advised to note especially such references.

A final purpose, advanced rather hesitantly in the light of the

previous one, is to stimulate the invention of new projective methods. The author is not of the persuasion that a moratorium should be declared upon the creation of new tools that might prove superior to those now available. It seems unlikely that psychologists will have any more success in producing a single experimental method, which will be both practical and more revealing than combinations of present methods, than the alchemists of the Middle Ages had in their search for the philosopher's stone which would convert rubble into precious metals. It may easily follow, however, that techniques that will bring into focus other reflections of the personality than those now projected may develop out of the analysis of the range of techniques here catalogued.

The plan of the book is simple. After the opening chapter, which defines and discusses some of the general theoretical and methodological aspects of projective techniques, the various methods are described in turn. The work is concluded with a chapter summarizing the techniques and suggesting the appropriate research needed.

A bibliography has been appended to each chapter rather than being centralized into a general bibliography at the end. While this has involved the duplication of some titles, it was felt to be a more useful form. The bracketed numbers in the text refer to the respective chapter bibliographies. Most of the references are to publications in English, although foreign-language titles are included from time to time where they are of especial importance. This policy is followed because the greater part of the recent work in projectives has been published in English and most of the basic works in other languages are available in translation or abstracted in review articles.

An artificial classification of the techniques has been made for purposes of convenience. The separation of the various methods into categories is not readily supported by logic. It is merely a crude attempt to simplify a field that does not lend itself easily to simplification, since in projective techniques we are dealing with expressions of the total personality.

Rigid classification on the basis of the stimuli used to produce expressions of the personality might have been a possible order for dividing the techniques from one another. Such is the variety

of stimuli used, however, that such a system would have proved unwieldy. This method of division has been used, in part, by grouping together those techniques dependent upon semi-structured or structured visual stimuli, such as the partially structured ink blots of the Rorschach Technique or the cloud pictures of the Stern Method, and the structured pictures of the Murray Thematic Apperception Test, its derivatives, and comparable methods.

A second classificatory principle, classification on the basis of the responses to the stimuli, cuts across the classification based on stimuli. To illustrate, *Completing Pictures* has been grouped together with *Graphology* and *Drawing and Painting* under a general title of *Expressive Movements*, whereas it might equally well have been placed in the visual stimuli group. On the other hand this second principle has not been strictly applied, or else *Play* and the *Psychodrama* might have been included under *Expressive Movements*.

The scheme of Frank,⁶ in which he divided the tests into four groups, based on responses, was considered as an organizational method but abandoned because of the overlapping of the categories. He distinguished four types of responses: the *constitutive*, as when a subject organizes an unstructured medium, such as clay or finger paints, or a semi-structured medium, such as the Rorschach cards, into a configuration; the *interpretative*, as when a subject gives a meaning to a stimulus situation, such as in the Tautophone Test; the *cathartic*, as when a release of affect is accomplished in the behavior process involved in the responses; or, the *constructive*, as when the subject utilizes the form of material (e.g., the Mosaic Test blocks) to build an organized pattern. These categories were not proposed as, nor can they become, mutually exclusive groups.

The sampling of behavior involved in projective techniques is so extensive that any classification of them becomes a classification of human behavior. Any such scheme must of necessity be constructed of artifacts, if one accepts the basic hypothesis of the unity of the personality upon which projective techniques are

⁶ Frank, L. K. Projective methods for the study of personality. *J. Psychol.*, 8 (1939), 389-413.

founded. The grouping of tests in this book is not neat, nor logical: it is functional, and that is perhaps the main argument in its favor.

Grateful acknowledgment is made of the assistance given in the preparation of this volume by the librarians at Clark University Library, the Worcester State Hospital Library, the Worcester County Medical Library, the Boston Medical Library, the Harvard University Libraries, the King's College Library, and the Library of Dalhousie University. I wish to thank Mary Elizabeth Donald, Thomas L. Salter, and the others who assisted with typing the manuscript with carefulness and persistent attention to detail. The cooperation of my colleagues at Clark University greatly facilitated the completion of this study. Words are inadequate to describe the helpfulness of my wife and my gratitude to her for her participation in all stages of the development of this volume. She annotated some of the references used, read and corrected the text as it was being written, undertook some of the proofreading, and in countless ways provided inspiration, encouragement, and insightful criticism. Mention must also be made of the peacefulness and beauty of the Prince Edward Island farm where the greater share of the writing was done.

J. E. B.

Worcester, Mass.
October 1, 1947

CHAPTER I

AN INTRODUCTION TO PROJECTIVE TECHNIQUES

PROJECTIVE techniques derive their title from the term *projection*, which has a variety of meanings, some of which seem applicable as a partial description of the processes involved in these techniques, and some of which are unsuitable. As yet, no clear and common definition of what is meant by "projective" has appeared among those who use these methods, although there is general recognition of what is implied in the use of the term.

Projection was first used in a psychological sense by Freud, one of whose definitions reads: (4, p. 857)

The projection of inner perceptions to the outside is a primitive mechanism which, for instance, also influences our sense-perceptions, so that it normally has the greatest share in shaping our outer world. Under conditions that have not yet been sufficiently determined even inner perceptions of ideational and emotional processes are projected outwardly, like sense perceptions, and are used to shape the outer world, whereas they ought to remain in the inner world.¹

A somewhat comparable definition is given by Healy, Bronner and Bowers (5): Projection is "a defensive process under sway of the pleasure principle whereby the Ego thrusts forth on the external world unconscious wishes and ideas, which, if allowed to penetrate into consciousness, would be painful to the Ego." Warren (11) also develops a definition following the psychoanalytic use of the term. He describes projection "as the tendency to ascribe to the external world repressed mental processes which are not recognized as being of personal origin and as a result of which the content of these processes is experienced as an outer

¹ S. Freud, *Basic writings of Sigmund Freud*, ed. by A. A. Brill (New York: Random House, 1938), p. 857. By permission.

perception." Noyes (9), too, follows this trend, identifying projection as a mechanism of defense, calling it an "automatic stabilizer," in which painful ego characteristics, i.e., the undesirable aspects of personality, are not recognized as belonging to ourselves; hence they are disowned and attached to other persons, thus permitting the individual to escape the feelings of tension. By this mechanism "responsibility is shifted and self-respect is maintained."

The common elements of these definitions are that the process of projection is unconscious, that it serves as a defense against unconscious drives, that it results in the attributing to others of unconscious impulses, feelings, ideas, and attitudes, and finally that it reduces personal tension. How far this type of definition may apply to the techniques we will consider here is not a question that can be readily answered except by hypothesis. As yet there has been practically no direct experimentation into the processes involved in projective techniques, and, in truth, such research would be difficult to accomplish, although some efforts in this direction have been made (cf. p. 23). We can assume that the mechanism of projection as defined by the psychoanalysts does apply in certain instances, notably in such a test as the Thematic Apperception Test. It is certainly true, however, that most projective devices would not necessarily involve solely an unconscious process. Even the tests that provide an opportunity for the expression of fantasy lead frequently to the manifestation of personal tendencies that are known to, and understood by, the individual. Thus, in the Thematic Apperception Test the subject may use material that he will acknowledge to be out of his own personal experience or reading. The expression of consciously recognized autobiographical material through projectives confirms the impression that more than psychoanalytic projection is involved. It is also true that the responses to a test may not involve so much a defensive function as an expressive function, although these two functions might coexist in the same behavior item and originate at different levels of the personality.

How far the mechanisms involved in these tests serve to reduce psychological tension in the individual is questionable, also. This may certainly be the case in some of the cathartic types of

projective media (cf. Introduction, p. xv) but not necessarily because a projection dynamism exists. Clinical impressions in the use of other than cathartic types of media would indicate that, rather than reducing tension, they build up tension, although here again both a releasing and a piling up of tension might appear together in different strata of the personality. It would seem reasonable to conclude that, if projection in the Freudian sense is involved in these tests, it is not the exclusive process and in some instances, perhaps, only a minor aspect of the total process. This has led Cattell (2) to prefer the term "dynamism tests" for this group of methods.

Other definitions of "projection" have been brought forward to explain the use of its adjectival form in the title of these techniques. A common parallel is drawn between the test situation and the projection involved in architecture or in map-making. In this connotation, projection means the reproducing of a three-dimensional form on the two-dimensional plane of the drafting table. While the analogy is not complete, it is based on the assumption that the methods to be described here do portray the multidimensional personality in such a simplified way that it may be more readily observed and analyzed. Rapaport (10) likens the projection to that in the moving pictures, where the film represents the personality; the movie projector, the technique; and the pictures seen on the screen, the test record. Obviously such conceptions differ markedly from that of projection as a defense mechanism. They describe not so much what happens to the subject as what happens for the examiner. It would seem, also, that they represent the process in this particular type of test more adequately than does the defensive mechanism definition. Their inadequacy is in the extent of their generalization, for they are such broad definitions that they reflect little of the specific nature of the methods.

The writer would prefer to apply the most common meaning of "projection," stemming from the Latin roots, to the use of the word. In this sense, it means "to cast forward," which is the action involved in the techniques. The subject manifests his personality in them by "thrusting it out" where it may be inspected. In the "throwing," the personality is not grossly modified; it is only

externalized in behavior that is typical of the individual. In this way the technique acts as a catalyzing agent to bring about the reaction, as Frank (3) has pointed out. In spite of the deficiencies of the term, "projective" has been adopted in this text because it does describe partially what takes place in the techniques and because it has the advantage of carrying a significance through usage beyond the strict meaning of the term.

GENERAL CHARACTERISTICS OF PROJECTIVE TECHNIQUES

"Projective techniques" gathers together a large number of methods for the measurement of the personality into a collection that is not precisely delimited. The group has, however, some organization, both in terms of its composition and of what it excludes. The purpose of projective techniques is to gain insight into the individual personality. Their goal does not distinguish them from the inventory-type of personality tests, which were developed on the assumption that answers to questions would provide the information needed for understanding an individual. In terms of approach to the personality, projectives are separable from other personality tests. The methods that compose the material for this study set out, in general, to reveal the total personality, or aspects of the personality in their framework of the whole. The outlook upon the personality is "global," as Wells would say (12), in contrast to the "atomistic" which centers its attention upon traits of the personality considered as disparate items. The latter approach is representative of the questionnaire-type of tests and of much statistical research into personality.

In terms of method, such is the variety in projective techniques that generalization is difficult. There are some common characteristics, the first of which is the presentation of a stimulus to the subject which does not make manifest, or only partially makes manifest, the real purpose of the examiner in requesting a response. Generally the examiner gives some inaccurate purpose as part of the structuring of the stimulus situation for the individual, or the subject is left to guess the examiner's intent. This reduces conscious control by the subject over the behavior which is to be analyzed and produces responses reflecting his own individuality.

The interpretation the subject makes of the test situation provides the first reflection of the personality. It is assumed in these techniques that the individual organizes events in terms of his own motivations, perceptions, attitudes, ideas, emotions, and all other aspects of his personality. In adopting this hypothesis, an examiner might use almost all behavior of the individual as a projective technique, including all types of tests, whether of intelligence, aptitude, achievement, interest, or personality. In practice, however, the subject's ordering of some situations has proved to be more indicative of the personality, and to these, mostly, the term projective techniques has been applied.

The second aspect of method common to projective techniques is that they sample individual behavior in a structured event of sufficient brevity to be clinically practicable and of sufficient stimulation to call forth a wide range of individual responses. In interpretation of the responses, the emphasis is upon the personal element shown in the diversity of behavior. Projective techniques emphasize primarily the uniqueness of the responses—those qualities that discriminate between individuals. Thus the best technique is that which will command the greatest range of responses in the shortest possible time. While one goal in the interpretation of these methods is to develop normative standards for the responses, the value of such norms is considered to be not so much how they group persons together by means of similarities as how they show departures from the norms, or dissimilarities. This means that the responses on a projective test are less easy to abstract quantitatively under a simple formula than are the choices recorded by personality inventories. It means, further, that the responses to projective tests are usually less easy to treat statistically than are the limited types of responses secured by the paper-and-pencil personality tests, thus making measurement of the reliability and validity of the techniques a difficult but essential procedure. It does not mean, however, that quantitative methods are undesired in the interpretation of projective responses. Quite the reverse is true, even though reaching such quantification is frequently a complicated task. Those who have developed projective techniques have not been timid about introducing subjective aspects into the scoring and interpretation.

In many respects such qualitative measures have been the forerunners of quantitative analyses. It is to this point, the qualitative in projective techniques, that the strongest criticism has been directed—but, that there is a qualitative element in scoring and interpretation is not usually the result of a preference for intuitive methods but of the complexity of the data to be dealt with, and hence of the difficulty in applying mathematical methods.

A third characteristic common to the method of projective techniques is to regard the recorded behavior, as well as the personality that produces it, as an organized totality. This is an additional reason why quantitative analysis is not readily achieved. Within the total behavior record a specific item may have a variety of meanings, depending upon the way it is integrated into or differentiated from the total. Thus, in the Mosaic Test the use of a block of a specific color and shape may bear a variety of meanings according to whether it is the only representative of the color, or whether it is one of a large number of single blocks of the same color, or whether it is the only bright color in an otherwise dark group, or the only dark color in a bright mass, or one of a group of bright or dark colors. A similar differentiation in the use of the block may be made on the basis of its form. Also, the configuration in which the block is placed will affect its significance. If it is part of a highly organized realistic pattern its value is different than if it is part of an abstract design, or of a disorganized medley, or of a chain of blocks matched simply according to edge relationships. While configurational tendencies are obvious in the Mosaic Test, they are also present, even though less apparent, in such behavior as children's play, the Psychodrama and the Musical Reverie. This does not necessarily mean that a specific trait of behavior in a projective test may not show a universal meaning regardless of its orientation, although this is a relatively rare occurrence. It implies that the possibility of the interrelatedness of various behavior items affecting the single item must be ruled out before such a universal significance may be confirmed. This produces a further handicap to a strict mathematical consideration of data. Remember that the presence of configurational qualities in behavior-responses is an assumption, but one which claims to itself the support of considerable scientific evidence. Whether justi-

fiable or not, this hypothesis is fundamental to the method of projective techniques.

SOME THEORETICAL FOUNDATIONS

The understanding of projective techniques is bound up with mastery of the underlying theoretical constructs, of which the most important is the conception of the personality. While those who have developed and experimented with these methods could not more easily be persuaded to adopt a common definition of personality than psychologists as a whole, certain accepted concepts of personality underlie their work. The first of these is that personality is not a static phenomenon, but a dynamic process. Thus, the changing and ongoing personality must be measured by instruments that not only are capable of evaluating the status of the personality at the moment but are able to reflect modifications produced in it through the passage of time. Such measurement is conceived to be possible because, while the personality is not static, it is structured.

The structured nature of personality is the second generally accepted concept. The structure of the individual is developed by the particular range of physiological, psychological, and physical-social-cultural influences that are brought to bear upon him. There is much disagreement as to how this integration occurs, with frequent overemphasis upon the responsibility of one or another of the factors, but that a structured unit evolves and is evolving is customarily assumed.

The third construct of the personality is that the personality structure, as well as the influence of the field in which the personality is operating, reveals itself in the behavior of the individual since behavior is functional. The individual's behavior reflects the integral relationship between the demands of the self and the demands of the situation and is an attempt to adapt to these internal and external demands. Thus, the observable responses of the individual in specific situations are consistent with the personality in that situation, although they may not be consistent with other expressions of the personality in other situations. Logical consistency of behavior is not the same as psychological consistency,

and, while the former may be present, the latter is always present. Since behavior has this definite relationship to the personality structure, every act reveals the structure, with some acts telling more than others about their origin. Projective techniques are attempts to order the most readily interpreted behavior of the individual.

The fourth major theorem concerning the personality is that it is not a surface but a depth phenomenon of which the surface manifestations form one stratum. Some traits of the personality are observable, and others are hidden not only from the outside world but even from the individual himself—these are the unconscious phases. They are related to the surface layers of the personality in an ordered fashion that, while freely hypothesized but only sketchily traced in actuality, makes possible inferences from external observations to the latent structure and content. Part of the function of projectives is to explore the nature of these unconscious areas.

SOURCES OF BASIC THEOREMS

Those acquainted with the historical development of theoretical psychology will trace the sources of these concepts to those who have first proposed them. We find that the psychoanalytic movement and the creative contributions of Freud were a major force in shaping these theories. We are indebted to Freud for the concept of the unconscious and for his pioneer work in deducing its laws and demonstrating its motivational force in personal behavior. He, too, is responsible for the pattern by which analysis of the latent content may be accomplished through observation of manifest verbalizations and associated behavior. A majority of the projective techniques may be called structured forms of association activity, which found the first important demonstration of its clinical usefulness in diagnosis and therapy in the work of Freud. We are also indebted to him and to his followers for the investigation of the relationship between a patient and a therapist, which has made possible more adequate definition of the nature of situations that react upon the personality and the effects such situations have upon behavior. This has focussed attention on the critical

subject-examiner relationship in the testing situation, and in the field of projectives has led, in some instances, to attempts at control and use of this relationship or at elimination of its influence to reduce the variables affecting the personality. It must be admitted, however, that little research has been done, as yet, upon this phase of the testing.

A second source of these points of view is in the Gestalt theory and its later developments, of which the major contributions are the emphasis upon the "totality" of the personality, of behavior, and of experience, and the analysis of the forces that determine behavior. The experiments of the Gestaltists have led to findings that relate to projective techniques in two ways. Their early research, developed to facilitate understanding of perception, carried on by Wertheimer, Kohler, Koffka, and others, contributes its findings to the understanding of the perceptual processes involved in projective techniques, especially those that present a fixed stimulus to which the individual must respond, such as the Rorschach or the Thematic Apperception tests. The interest of these investigators was in the processes of perceiving functional wholes rather than in the experiencing of parts of objects, except as those parts were differentiated from the whole and seen as integrally related to the whole. Previous investigators of perception had been mainly concerned with the minutiae of sensory experiences. Analysis of the responses in projective techniques, as mentioned previously, is based generally upon the theory that the individual responses are organized into a total pattern, a Gestalt, the discovery of which is a primary goal of the experimenter with projective techniques. Later experiments, notably by Lewin, extended the range of psychological processes to be analyzed from the Gestalt point of view and provided knowledge of the structuring of situations and the forces upon individuals within these situations. Lewin's contributions to psychological thought were more directed to analysis of motivation than specifically to perception. He attempted to picture the interrelationships between vectors, or forces motivating the individual in various directions, the barriers standing in the way of movement, and the behavior of the individual within his "life-space." Thus his assumptions deal not only with motivation, but with frustration, adjustment, and the

temporal and spatial fields in which behavior occurs. The influence of Lewin's extensive experiments upon the personality theory underlying projective devices is more indirect and yet more fundamental than the work of the earlier Gestaltists.

A third historical source is within clinical psychiatry apart from the specific psychoanalytic area of that field. To this science we are obligated for descriptions of behavior and personality structure in the abnormal, for delimitation of physiological factors in the personality, and for concepts of the relationship between abnormal and normal behavior and of the comparability of dynamic mechanisms in the normal and abnormal.

Cultural anthropology has contributed its knowledge of the social and cultural determinants of personality to form a fourth theoretical source. While its main goal has been to describe the different cultures in which man lives, the examination of the impact of these surroundings upon individual personalities has been a natural secondary aim. The psychology of personality gained support from this valuable science in removing the mechanistic bias of earlier personality theories.

A fifth major influence comes from research in learning, contributed partly by the Gestaltists and partly by experimental "academic" psychology. The latter source added especially the concepts of conditioning, of reward and punishment as motivating forces, and analysis of physiological processes in habit-formation. The weaving together of these threads from psychoanalysis, social anthropology, and learning experiments into a modern dynamic theory of personality has been carefully described by Mowrer and Kluckhohn (7).

It is noteworthy that the theoretical background, and even the majority of the techniques themselves, originated within European psychology, although some of the later theoretical contributions, especially those of Allport (1), Murray (8), and Maslow (6), have indicated that American psychology is capable of extending the theoretical approach to personality. The distinctive contribution of American psychology to the field of projective techniques has been in the application of theory and in practical research to test the values of the techniques.

The study of projective techniques reveals that their origins

and development are deeply rooted in the field of clinical psychology. Many of them grew out of the need for diagnosing the different groups among abnormal populations. Some are by-products of therapeutic procedures with the mentally disturbed. Others have been evaluated mainly with subjects from clinical groups because the extremes of behavior disorder have facilitated validation of the methods. It is not accidental, then, nor a result of my personal interest in the field of clinical psychology, that much of the research reported has a direct bearing upon the study of maladjusted individuals. Up to the present the most extensive application of projective techniques is with these individuals, although increasing use of the techniques with "normal" groups is being reported, as in vocational guidance, educational guidance and placement, military selection, cultural and racial analyses, and studies of normal personality development.

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PART I

WORD ASSOCIATION
AND RELATED TECHNIQUES

CHAPTER II

WORD-ASSOCIATION TECHNIQUES

IN ONE sense there is less need for including a chapter on word-association techniques in this volume than for almost any other type of test. The simple procedure of presenting a list of words to a subject and asking for the first word that comes to mind is well known, has been summarized effectively elsewhere (cf. Kohs, 34; Symonds, 70, who has a review of a bibliography of 91 titles; White, 77; and Rapaport, 53, 54), and, in its present state of development, is of limited clinical usefulness. On the other hand, from an historical point of view the test is so important that no over-all picture of projective devices could be considered complete without this aged parent of so many other tests. As a matter of fact, recent suggestions for its clinical use (Rapaport, Gill, and Schafer, 54) hold out the possibility of rejuvenating the method and of extending its applicability for practical clinical purposes. Whatever its place in the future, no one will challenge the position of the word-association test as the progenitor of the majority of our modern non-questionnaire-type of personality tests. Although new blood has been brought into the family by many other techniques, so that the present generation may appear to be quite remote from its ancestor, traces of the word-association method and of its underlying rationale are still present and apparent without much searching.

The first recorded study of the associative process appeared in 1879 under Galton's authorship (14). This, with himself as a subject, provided a framework for the inauguration in 1880 by Wundt (79) of the familiar "Free Association" experiment. By 1885, Galton was able to present the first systematic analysis of association (15). In the same year Cattell turned his attention to association experiments, and, with Bryant (5), published frequency

tables of associations. These names show that the association method began in the earliest psychological laboratories where it was a respected branch of experimental psychology. Clinical studies of association grew mainly out of the psychoanalytic movement, however, although Sommer (68) in 1899 predicted that word association could be made an accurate method of diagnosis. He undertook to show the characteristic differences between manic and catatonic subjects. He postulated the frequency in dementia praecox of irrelevant responses (such as "angel-spider") and of the tendencies toward monotonous iteration of the same responses, irrespective of the stimulus. Kraepelin (35), like Sommer, preceded the psychoanalytic movement with his interest in the bearing of the association method upon clinical diagnosis, and analyzed the effects of fatigue, hunger, and drugs upon word association. While Freud had already begun to use the association method of therapy, it was his co-worker, Jung, who first utilized free association in a test procedure. Although the extensive results of Jung's work did not appear in English translation until 1918 (26), the studies began in the first years of the century and led to the publication of an earlier article introducing his work (25). Aside from initiating a test using word association, Jung made his major contribution in standardizing the methods of administration and interpretation.

Jung used as stimuli a list of 100 words, since published (26), which were chosen as representations of common emotional complexes. The list is reproduced in Table I. A record of responses was achieved by noting the word a subject associated to each verbally administered stimulus and the time necessary to produce the reaction. Following the administration, a reproduction test was conducted in which the subject was asked to recall his original response. Jung deduced that wherever an emotional complex was activated by a stimulus word an irregularity of response would follow. He distinguished empirically three major types of disturbance, the most obvious being the abnormalities of content. He classified the content of responses into five categories: 1. *Egocentric, or subjective*, termed "predicate," illustrations of which would be a noun evoking a modifying adjective, a verb evoking a subject or an object, a response by a proper noun, a response where

TABLE I *

JUNG LIST (MODIFIED BY EDER) OF FREE-ASSOCIATION WORDS (26)

1. head	26. blue	51. frog	76. wait
2. green	27. lamp	52. try	77. cow
3. water	28. carry	53. hunger	78. name
4. sing	29. bread	54. white	79. luck
5. dead	30. rich	55. child	80. say
6. long	31. tree	56. speak	81. table
7. ship	32. jump	57. pencil	82. naughty
8. make	33. pity	58. sad	83. brother
9. woman	34. yellow	59. plum	84. afraid
10. friendly	35. street	60. marry	85. love
11. bake	36. bury	61. home	86. chair
12. ask	37. salt	62. nasty	87. worry
13. cold	38. new	63. glass	88. kiss
14. stalk	39. habit	64. flight	89. bride
15. dance	40. pray	65. wool	90. clean
16. village	41. money	66. big	91. bag
17. pond	42. silly	67. carrot	92. choice
18. sick	43. book	68. give	93. bed
19. pride	44. despise	69. doctor	94. pleased
20. bring	45. finger	70. frosty	95. happy
21. ink	46. jolly	71. flower	96. shut
22. angry	47. bird	72. beat	97. wound
23. needle	48. walk	73. box	98. evil
24. swim	49. paper	74. old	99. door
25. go	50. wicked	75. family	100. insult

the stimulus is taken as a proper noun, a response by pronouns, failure to respond, repetition of the stimulus word, or vague responses (these may be commonplace responses, or they may range to the distinctly individual and affective); 2. *supraordinate*, which consists in defining the stimulus by naming the class to which it belongs, and which represents an inferior adaptation to the experiment; 3. *contrast, opposites*, which is the mental mechanism opposing the egocentric; 4. *miscellaneous*, including causality, coexistence, identity, a concrete reaction type distinct from a subjective egocentric one; 5. *speech habit*, in which the response

* C. G. Jung, *Studies in word-association*. (London: Wm. Heinemann, 1918), p. vii. By permission.

builds up common phrases or word combinations, or is associated by sound, or is a syntactic change of the stimulus. Especially important for revealing the heightening of the emotions were repetition of the stimulus word, misunderstanding of the stimulus, stammered or whispered replies, or multi-word responses.

The reaction time proved also to be a complex-indicator. The most common sign of personal involvement was the lengthening of the time for response on individual words beyond the average length of time on all. Occasionally, however, a very short time was shown to be a defensive cover-up, and so, a clue to disturbance.

The final type of evidences of affect was found in the behavior of the subject during the test. Shifting of position in the chair, coughing, catching the breath, laughing, flushing, movement of the hands, and so on, illustrate the alterations of behavior that may occur when the subject is under emotional tension. It is understandable that any one single sign by itself may be significantly related to the personality of the patient, and Jung concluded that the presence of several signs occurring simultaneously strengthened the impression that emotion was disturbing the functioning of the subject.

The other outstanding early use of word association was in the test developed and standardized by Kent and Rosanoff (31, 32). Abandoning the reaction time and the logical classification of responses as indicators, they attempted to develop a list of 100 words which would be relatively neutral and to measure disturbance by unusual content responses. To achieve their purpose they tested 1000 normals and 247 psychotics with their list and worked out frequency tables, which have also been quoted by Rosanoff (56). By averaging the frequency of all responses on a test they arrived at an index of commonality. Their normal adults they found to give 91.7 per cent common, 1.5 per cent doubtful, and 6.8 per cent individual responses; the psychotics, 70.7 per cent common, 2.5 per cent doubtful, and 26.8 per cent individual. Kent and Rosanoff, themselves, were doubtful of the value of their results. They wrote:

The test records of dementia praecox depart from the normal not sharply but by a gradual shading off. We find similar gradual transi-

TABLE II *

KENT-ROSANOFF LIST OF FREE-ASSOCIATION WORDS (31)

1. table	26. wish	51. stem	76. bitter
2. dark	27. river	52. lamp	77. hammer
3. music	28. white	53. dream	78. thirsty
4. sickness	29. beautiful	54. yellow	79. city
5. man	30. window	55. bread	80. square
6. deep	31. rough	56. justice	81. butter
7. soft	32. citizen	57. boy	82. doctor
8. eating	33. foot	58. light	83. loud
9. mountain	34. spider	59. health	84. thief
10. house	35. needle	60. bible	85. lion
11. black	36. red	61. memory	86. joy
12. mutton	37. sleep	62. sheep	87. bed
13. comfort	38. anger	63. bath	88. heavy
14. hand	39. carpet	64. cottage	89. tobacco
15. short	40. girl	65. swift	90. baby
16. fruit	41. high	66. blue	91. moon
17. butterfly	42. working	67. hungry	92. scissors
18. smooth	43. sour	68. priest	93. quiet
19. command	44. earth	69. ocean	94. green
20. chair	45. trouble	70. head	95. salt
21. sweet	46. soldier	71. stove	96. street
22. whistle	47. cabbage	72. long	97. king
23. woman	48. hard	73. religion	98. cheese
24. cold	49. eagle	74. whisky	99. blossom
25. slow	50. stomach	75. child	100. afraid

tions between dementia praecox and other psychoses. . . . Whether or not in cases of doubtful clinical classification this association-test may be of aid in determining the diagnosis is a question that must for the present remain open. . . . By the application of the association-test, according to the method here proposed, no sharp distinction can be drawn between mental health and mental disease. (31)

Despite its ease of administration, the Kent-Rosanoff Test is subject to serious criticism on the basis of its norms. The large normal sample used by the authors and another sampling of 1000 subjects by O'Connor (51), resulting in their respective frequency

* G. H. Kent and A. J. Rosanoff, A study of association in insanity, *Amer. J. Insanity*, 67 (1910), p. 374-90. By permission.

tables, have not proved sufficiently large or representative to yield usable data in many other experimental situations. Word usage so varies with the region, the cultural group, the socioeconomic status, the intelligence, and the age, that norms for each particular segment of the population with which the test is to be used must be developed. Such a task has remained an insurmountable problem, although Woodrow and Lowell (78) developed a set of norms based on 1000 school children, 9 to 12 years of age, using the same list as Kent-Rosanoff, with the exception of 10 words. They found marked differences between adults and children in the types of responses. Thirty-nine per cent of the stimuli produced the same most frequent responses; only 5 per cent, i.e., 5 words, had the same three most frequent responses. They analyzed, also, the most frequent forms of association. In adults these were found to be contrast ("smooth-rough"), superordination ("lion-animal"), coordination ("woman-man"), part-whole ("head-body"), noun-abstract attitude ("child-happy"), participles ("wish-wishing") and cause-effect ("afraid-run"). In children, however, the most common categories were: verbs ("lion-roar"), verb-object ("butter-bread"), noun-adjective ("citizen-solid"), adjective-noun ("green-grass"), pronouns ("health-my"), sound similarity ("rough-tough"), contiguity ("table-chair"), whole-part ("blossom-petal"), and, less definitely, subordination ("butterfly-wing") and word-compounding ("girl-friend"). No reliable differences were found between children and adults with respect to similarity in meaning ("swift-fast"), material ("chair-wood"), effect-cause ("comfort-eat"), non-specific reactions, and a miscellaneous group.

The Kent-Rosanoff Test has been used somewhat for group studies, but has not shown itself to be valuable for individual diagnosis. An example of its group applicability is found in an experiment by Graham (17), who studied the effects of insulin therapy with an abbreviated Stanford-Binet Test, the Rorschach Test and the Kent-Rosanoff Test, the last-mentioned with 15 out of his 65 subjects. Although he found much individual variation in the results of the word-association part of his research, more patients showed improvement than did not. In general the patients averaged more common responses and fewer pathological

responses after the treatment than before. Schnack, Shakow, and Lively (62) also used the Kent-Rosanoff Word-Association Test, in combination with other projective devices and the 1916 Stanford-Binet, in measuring the changes produced by insulin and metrazol therapy, thus deducing the values of the respective tests for prognosis in these shock treatments. Their results in word association were inconclusive. A further example of the use of this test with groups is the experiment of McDowell (41), who found by its means no significant differences between stuttering and non-stuttering children. Only tendencies to differences in children's responses according to age and sex were found by McGehee (42), in another group application of the Kent-Rosanoff Test. Mitchell, Rosanoff, and Rosanoff (46) also used this word-association test with Negro children, who at every age level from 4 to 15 years showed scores in the average case inferior to those of white children. However, there was much overlapping between the racial groups, 34.3 per cent of the Negroes being superior to the average white.

MODIFICATIONS

Many modifications in the technique of word-association tests have been proposed from time to time. Only some of the more recent alterations in procedure will be considered here in the light of the previous surveys of word association. The range of suggestions is from changes in technique of administration of the stimuli, through composing new word lists, to adjustments in the methods of evaluation and interpretation. Crosland (7, 8) tried verbal, phonographic, and visual presentation of the stimulus words. He found no advantage in departing from the traditional reading of the stimulus word, but concluded that, if anything, this method was superior. On the side of evaluation, he worked out a list of 40 signs of guilt as revealed by the word-association test. He gave his test to 55 college students, of whom 7 were guilty of known but unconfessed misdemeanors. As a consequence of the data he accumulated from the word-association test by means of his signs, 6 of the 7 students confessed (6).

The use of hypnosis as a part of the test procedure is not a new

method but it does appear in a variety of recent experiments. Rather than produce a particular complex that might be revealed through word association, as was done by Luria (40), Huston and Shakow (22), and others, Fisher and Marrow (12) induced moods of elation and despondency in their research into the effects of moods on the speed and quality of free-association reactions. Their list of test words included four types of stimuli: words with pleasant meaning, words with unpleasant mood associations, words with mood associations of unpredictable nature, and words without appreciable mood associations. The experimenter who gave the word-association tests was not informed as to the nature of the induced mood. Fairly consistent differences in reaction time were observed. In the despondent mood the times averaged 167 per cent of the average normal reaction time. Under the elated mood the time was not quite so prolonged but in the same direction. The appreciable difference found in the reaction times for the different types of words supported the conclusions of earlier investigators that reaction time reflects emotional involvement. The words grouped themselves in the following order as to increasing length of reaction time: neutral, pleasant, unpredictable, and unpleasant mood associations.

A study of normal moods based upon daily reports on an 11-point scale by 30 sorority residents at the University of California over periods of 65-90 days introduced a variation of the word-association technique, as well as other measures. Johnson (24), who conducted the experiments, made a covert count of the spontaneous remarks of the subjects during the course of each experimental session. Sixty-one per cent of the remarks were made in periods when the subjects reported they were in cheerful moods. Chained, rather than single word associations were secured from the subjects in the measuring of the speed and emotional tone of associations. Johnson found a less-than-reliable magnitude of difference in speed of associations to a list of 6 words under the various emotional conditions, and she noted only a trend toward pleasantness during the euphoric mood when she read back the words associated by the subjects and asked for introspections as to whether the words were pleasant or unpleasant. Chained associations were also used by Meltzer (45) in studying the attitudes

of children toward their parents. Murray (49, 50) preferred chained associations to single word responses for the investigation of fantasy.

Application of the word-association test for a distinctive purpose was the approach of Sanford in two closely related experiments (59, 60). For the first experiment he prepared two word lists of 24 words each, containing stimuli that might relate to food or to the eating situation. He also used two series of pictures with similar content. He gave one of the lists of words to 10 school children immediately before a meal and the other immediately after. Significantly more food responses appeared when the children were hungry. A further experiment, larger in scope and with 64 subjects, 27 of whom were tested after a 24-hour fast and the rest at various times without deliberate fasting, included five methods: 1. a word-association test with 24 words, each of which had been judged capable of eliciting a food or eating-situation response; 2. the interpretation of ambiguous pictures in each of which the activity of the people might be interpreted as having to do with food; 3. written chained associations to 10 stimulus words; 4. completion of drawings, each derived from an original drawing of some object of food or some object related to the eating situation; 5. the completion of 20 pairs of letters of the alphabet into words (the letters were the first two letters in a number of common words and also the first two of actual names of foods). The subjects were not told the real nature of the experiment. Food responses were found to increase during the normal eating cycle and over a 24-hour period, although the increase in the latter case was not in direct ratio to the increase in time, the average of those who fasted being only slightly greater than that of subjects examined near the close of the normal eating cycle. Apart from the value of these experiments with reference to human hunger, they carry a broader significance for projective tests in general, reflecting, as they do, the manner in which the current psychological and physiological status of individuals may be revealed in the imaginative responses.

Emphasizing the necessity of preparing special lists of words for any particular research, Eysenck (11) points out an aspect of the stimuli not mentioned elsewhere in the literature on word

association, that the sound of the word may carry a pleasant or unpleasant value to the individual. He based his analysis of words upon earlier studies of the affective significance of various vowels and consonants by Washburn and Roblee (75). These experimenters found the following characteristics to apply to sounds:

- a. The most agreeable vowels in combination with a final consonant are *a*, as in father, *e*, as in get; the most disagreeable is *u*, as in mud;
- b. the most agreeable final consonants are *l*, *m*, and *n*; the most disagreeable, *g* and *k*;
- c. those sounds about which there is most disagreement are *a*, as in fate, *oi* or *oo*, and *zh*;
- d. neutral sounds are *i*, as in write, *a*, as in hat, *s* and *f*.

Eysenck warns that the inclusion of comparatively rare words with pleasant meaning and unpleasant sound, such as "talk," "cot," "tog," or words with unpleasant meaning and pleasant sound, such as "moan," "loathe," "lame," will produce distortions in results. So that the test may be used in a group situation, Eysenck suggested using lists of about 15 to 20 words with perhaps 6 to 8 words included which might reasonably be expected to arouse some emotional reaction connected with the purpose of the inquiry. Responses would be obtained by asking the subject to rank the words in order of preference. Scoring would consist first in getting the average ranking of the group on each word. Low correlation of individual scores with this group average would provide an index of "abnormality"; high correlation, an index of "normality." The nature of the words displaced from the average position would give a hint as to the possible causes of the subject's reactions, pointing the way to further directed individual analysis. Anthony (1) also used a comparable scheme of administration, asking 36 11- and 12-year-old children to rank 9 words in order of preference. She then evaluated the results by factor analysis and judged the method to be useful as a personality test.

Also turning his attention to the stimulus value of the words, Tendler (72) developed a modified Kent-Rosanoff Test of 25 words based upon the potency of the stimuli to evoke individual responses, the typical juvenile feature of adjective-noun responses, lengthened reaction time (3 secs. or above), and disturbances in recall. Following the usual administrative procedure, including recall of responses, he found the test reliable by the split-half

method. Certain of his results are of clinical usefulness. He found that time and recall correlated negatively in a moderate degree with I.Q. ($-.42 \pm .06$, and $-.29 \pm .07$ respectively). Adjective-noun responses were shown to be characteristic of neurotics; individual responses, of psychotics. Adjective-noun and individual responses correlated negatively. He worked out a table of percentile scores on the basis of results with 240 cases to reveal the level of contrast (normal feature), individual (psychotic), and adjective-noun (neurotic) responses, and time and recall disturbances (indicative of disturbance in general mental activity). This table, reproduced in Table III, was demonstrated by Tendler to be of value in individual diagnosis.

TABLE III *

PERCENTILE SCORES ON FIVE RESPONSE FEATURES ON A MODIFIED
KENT-ROSANOFF TEST
(After Tendler, 72)

PERCENTILE	SCORES (NUMBER OF WORDS)				
	C	I	A/N	T	R
0	0	0	0	1	0
10	0	1	0	3	0
25	0	2	2	5	2
50	2	3	4	9	4
75	8	7	8	14	6
90	11	14	14	18	9
100	19	24	21	23	20

C = Contrast

I = Individual

A/N = Adjective-Noun

T = Time

R = Recall

Above 50 percentile in C is favorable.

Above 50 percentile in all others is unfavorable.

VALIDITY AND RELIABILITY

Among the most important of the validation experiments with word association are those that have attempted to show concur-

* A. D. Tendler, Significant features of disturbance in free association, *J. Psychol.*, 20 (1945), Table 11, p. 84. By permission.

rence of the appearance of complex-indicators and of measurable physiological disturbances. Peterson and Jung (52) were the first to use the galvanometer and the pneumograph during a word-association test and were able to demonstrate a positive correlation between prolonged reaction time and the galvanic skin reflex. Smith (67), who made a more extensive investigation than Peterson and Jung, established a correlation of .47 between galvanic deflections and association times. On the other hand, using three tests of 100 words each, Crosland (7, 8) found correlations ranging from $-.195$ to $+.116$ between the psychogalvanic responses and the times of word responses. Somewhat later, Hunt and Landis (21) found that only 1 out of 22 subjects gave a significant correlation between galvanic deflections and association times. Such findings as the latter do not necessarily negate the value of the test as a whole, but simply reflect the untrustworthiness of the reaction time as an indicator of disturbance. The presence or absence of other complex-signs was not taken into account in presenting these results.

Beginning with the studies of Luria (40), a number of experiments were instituted with a new technique for studying physiological tension which seems superior to the psychogalvanometer. Practically all of these experiments combined word-association tests and the use of the Luria apparatus. The apparatus consists of two sensitive tambours connected with instruments for the graphic recording of pressure. During the test, the subject rests his left hand (or right hand in the case of left-handed individuals) on one tambour and strikes the other with his preferred hand upon giving the response word. Thus, both unconscious and conscious motor behavior are simultaneously recorded. The first experiment to follow Luria's with this technique was by Huston and Shakow (22). Using hypnosis to induce complexes in 12 patients, they gave a more complete report than Luria, who had also used hypnosis, on their evaluation of the method. In 9 subjects some motor aspect of the Luria technique revealed the presence of conflict; in the other 3 there was some question as to their acceptance of the suggested complexes, and no evidence of motor disturbance. Barnacle, Ebaugh, and Lemere (2) used the Luria method with 50 normal and 50 psychoneurotic subjects and distinguished

four components for evaluation: the reaction time, the type of association as evidenced by the content of the responses, any irregularity in right-hand pressure, and involuntary left-hand pressure or tremors. Ebaugh (10) extended this experiment in comparing 100 normals with 297 psychiatric cases. His word list consisted of a standard list of neutral words with every third or fourth space left blank to be filled with words "critical" to the dynamic factors underlying each patient's illness. He found the records to be especially useful in therapy in supporting psychiatric interpretations and hence shortening the length of treatment. Krause (36) discovered significant coefficients of association between reaction times of over 2.6 secs. and motor disorganization as measured by the Luria technique.

Also using the Luria method, Kephart and Houtchens (33) compared the results on the Jung and Kent-Rosanoff tests given to 50 boys, 12 to 18 years of age, with a range of I.Q.'s from 82 to 118. They concluded that within the limits of their group and with fairly normal individuals the group scores on the association-motor test are independent of the word list used, provided the words are common in the language and their meaning is known to the subject. Such a result might lead to doubting the validity of the Jung and Kent-Rosanoff tests, which in theory of construction are so divergent, although there are some words in common. Or, it might lead to a questioning of the Luria method as a reflector of emotional conditions. The latter question was raised by Reymert and Speer (55). In an attempt to answer the question they abandoned word association and substituted what they described as "non-emotional" material, an arithmetical series of increasing difficulty. Their finding was that this series produced disturbances similar to those found with progressively more emotional material, with the left hand being more sensitive to disturbance than the right hand. As the authors themselves point out, they may have been dealing with emotional material in their number series. If one follows the theory of Rapaport, Gill, and Schafer (54), to be discussed later, one might expect that the test situation itself would create emotional reactions by setting up an *anticipation* of response through the instructions, leading to success or failure in meeting these anticipations. If such a

theory is tenable, and it has the support of common sense, he would be led to conclude from Reymert and Speer's experiment not that the Luria technique fails to record emotional disturbances and registers only physiological tension, but that seemingly non-emotional material is capable of producing emotional reactions in an association test.

Inventive energy has been applied to improving the Luria apparatus, and two modifications, both in the techniques of recording, have been proposed. Langer (37) developed a method of recording finger pressures by photography, which was used, among other methods, in the investigations of word association by Murray and his associates (49, 50). Eliminating the pressure-graph recording, Shuey (65) contrived a completely mechanical apparatus, which had the advantage of being able to register both upward and downward movements with equal facility, whereas Luria's apparatus had only been sensitive to the strength of downward pressures. In his testing of the machine he used a fixed list of 12 words with 81 psychotics and 31 non-psychotics. He obtained four general types of reactions: 1. *small* type, a product of weak pressure with tracings of $\frac{5}{16}$ " to $2\frac{1}{2}$ " and averaging $1\frac{1}{2}$ "; 2. *large* type, from very strong pressure, ranging from 3" to $4\frac{3}{4}$ "; 3. *transition* type, a mixture of large and small; and 4. *chaotic* type, with no definite response to the words but an entire graph of chaotic movements. Manic-depressives showed predominantly small and chaotic records (70 per cent); paranoids, large and transition (80 per cent); and catatonics, small and transition (83 per cent). The chaotic response was typical of manic-depressives or of catatonic and hebephrenic schizophrenics in excited, depressed, or stuporous phases. Shuey was thus able to deduce patterns characteristic of several clinical groups, as shown in Table IV. While one pattern is not exclusive to a specific classification, it is evident that, combined with other psychological methods, the Shuey instrument might provide useful additional diagnostic information. It is important to note that Shuey recorded only the responses with the right hand. It might be expected that testing with both hands would prove even more successful.

The most recent measure of physiological change during word association is the electroencephalogram. Liberson (38) devised

TABLE IV
RESPONSES OF PATIENTS TO A MODIFIED LURIA
MOTOR-ASSOCIATION TEST
(Shuey, 65)

<i>Clinical Classification</i>	<i>Pattern of Tracing</i>
1. Typical manic	1. Small
2. Manic with paranoid coloring	2. Large
3. Typical depressed	3. Small or chaotic
4. Typical paranoid	4. Large
5. Typical catatonic:	5.
a. When not in stupor or excitement	a. Small
b. If in stupor or excitement	b. Chaotic
6. Typical simple schizophrenic	6. Small

carefully controlled experiments combining the Jung word-association test and the measuring of the alpha depression in the left parieto-occipital leads. Plotting the duration of the depression of alpha activity during the latency period against the response time gave evidence of a strong positive correlation. Analysis of the relationship between the persistence of the depression of alpha activity and the emotional charges of individual words (as measured by averaging the reaction time of responses by a mixed psychotic group) showed that there was similarity in the results. Thus the electroencephalogram offered no distinct advantage over measuring reaction time in the customary way. Following this experiment, Liberson did develop an interesting "silent method" of association to words. With this new method "the patients are not asked to respond to the words given. In some cases this method is of decisive advantage, as when the patient is mute or not cooperative. The following technique was developed. The words were transcribed on a phonograph record. Each word was repeated several times during a total period (fifteen seconds) which remained the same for every word. An emotional word was alternated with a neutral one. The per cent of each fifteen-second period free of any alpha activity was determined . . ."¹ (38, I) Although the number of cases was small, the average depression of

¹ W. T. Liberson, Study of word association processes, I, *Inst. of Living*, 13 (1945), 600. By permission.

alpha activity for emotional words was found longer than for neutral ones. As in the traditional word-association experiment, differences between individuals were observed in the amount of associated activity. The silent method, while not for general clinical use, might, as Liberson suggests, be used with other physiological recordings.

A recent study of the reliability of the word-association test has been published by Karwoski and Berthold (29), who were especially interested in the reliability of scoring content according to various categories. They used eight classificatory groups:

1. *Essential similarity*—i.e. words having the same meaning, such as “large-big”;
2. *General identification*—a generalization about the stimulus word, such as “cabbage-vegetable”;
3. *Specific identification*, where the associated word has a specific meaning included within the stimulus, e.g. “ocean-Pacific”;
4. *Contingent identification*—the response is a characteristic of the same object or act as the stimulus, e.g. “egg-breakfast”;
5. *Essential opposition*, in which the response is the opposite of the stimulus, e.g. “hot-cold”;
6. *Contingent opposition*, e.g. “foot-hand,” or, “house-barn,” i.e., diverse objects related spatially;
7. *Operational definition*, in which the response is something which is done to the stimulus, or the object of some action implicit in the stimulus, e.g. “hit-ball,” or, “floor-wash”;
8. *Phrase completion*, e.g. “boy-friend,” “morning-good.”

Four raters, two in the field of psychology and two in philosophy (logic), classified the responses in the tests of college students and achieved a 69 per cent agreement among themselves. The categories of *essential contrast* and *contingent identification* proved easier to score than *general identification*, *contingent contrast*, and *specific identification*, and of these, the last named was the most reliably scored.

A NEW METHOD

The most valuable recent development in word-association testing, which can only be summarized briefly here, comes from the Psychology Department at the Menninger Clinic. A special fea-

ture of the studies by Rapaport, Gill, and Schafer (54) is the attempt to develop a theoretical basis of operational hypotheses for the test. Schafer has described this rationale in an independent article (61). Although, as he points out, "the evidence" for the processes described "is only suggestive," the constructs do provide a framework for scoring and interpreting the tests. The first of the proposed theories is that, in providing explicit instructions at the beginning of the test, a mind-set is established, called by the authors an *anticipation*, toward producing a quick, one-word response without selection. Almost always it is assumed by the patient, although not stated in the instructions, that the associated word must also be related in a sensible manner to the stimulus. The instructions which establish this anticipation are:

"I am going to call out a list of words to you, one at a time. After you hear each word, I want you to call out one other word. It does not matter what the word you call out is, but it must be the first word that comes into your mind after you hear my word. I should like you to call out your words as fast as you can because I will be timing you."² (61, p. 213). Rapaport, Gill and Schafer add: "When people take this test they have a tendency not to hear some of the words the examiner calls out. I want you to resist this tendency: I am not to repeat the words." (54, p. 36).

The response provided by the subject has the purpose of fulfilling, more or less, the anticipation. The process of selection by which the subject strives to meet the anticipation is little understood but appears to take place more or less outside of consciousness.

The second construct is that, in the attempt to achieve the anticipation, the subject analyzes the initial idea which prompts the responses, in the case of the word-association test, the stimulus word. In most instances, the analysis is unconscious, although it may become conscious, as in obsessive or highly-introspective subjects. During this activity in the *analytic-phase*, memories, in the form of ideas or affects that have previously been in consciousness, are touched off automatically by the stimulus word.

Following "analysis," comes the third hypothesized aspect of the associative process, the preconscious determination of a suit-

² R. Schafer, A study of thought processes in a word association test, *Char. and Person.* (Durham, N. C.: Duke Univ. Press), 13 (1945), 213. By permission.

able response in accord with the anticipated result, the selection of one word which will meet the qualifications of the test instructions; this is called the *synthetic phase*. In normal, well-adjusted individuals the associative process results in the coming to consciousness of a response that bears a conventional conceptual relationship to the stimulus.

These three phases of association are identified as ego functions, reflecting the relative strength or weakness of the ego. Therefore, to the mind of the authors, symptoms of the associative process are of more value diagnostically than the final product (the reaction word) achieved. In line with the recent trend in the use of word-association tests, they are more interested in the stimulus and its immediate effect upon the individual than in the content of the resultant response, except as the latter reveals success or failure in association. Disturbances in association are the product of conflict and weakness of the ego.

If the intensity of the conflict is the major factor, the association disturbances will be spot-like; if disorganization, the association disturbances will more likely be widespread. However, some types of association disturbance in themselves indicate far-reaching disorganization, even though the Association Test otherwise is "clean." For the evaluation of association reactions, it must therefore be kept in mind that, while the Ego is strong, the reaction-word will only rarely reveal the nature of the conflict; and when the disorganization becomes extensive, the association disturbances become generalized, and the reaction-word is no longer representative of the conflict. Our experience then is that the affect-laden areas of ideation can be inferred more from the stimulus-word on which the association disturbance occurred, than from the content of the reaction-word.³

In accordance with this, Rapaport, Gill, and Schafer have adopted a stimulus list prepared by Orbison and later modified by them to include the words in Table V, although their reported research is based upon the earlier list. The list will be seen to touch upon many varieties of common conflicts including aspects of psychogenesis according to psychoanalytic theory. The standard procedures of verbal presentation, recording of the content

³ D. Rapaport, M. Gill, and R. Schafer, *Diagnostic psychological testing: the theory, statistical evaluation, and diagnostic application of a battery of tests*, Vol. 2 (Chicago: Year Book Pubs., 1946), p. 19. By permission.

TABLE V *
WORD-ASSOCIATION LIST
(Rapaport, Gill, and Schafer, 54)

1. hat	21. suicide	41. cut
2. lamp	22. mountain	42. movies
3. love	23. snake	43. cockroach
4. book	24. house	44. bite
5. father	25. vagina	45. dog
6. paper	26. tobacco	46. dance
7. breast	27. mouth	47. gun
8. curtains	28. horse	48. water
9. trunk	29. masturbation	49. husband
10. drink	30. wife	50. mud
11. party	31. table	51. woman
12. spring	32. fight	52. fire
13. bowel movement	33. beef	53. suck
14. rug	34. stomach	54. money
15. boy friend	35. farm	55. mother
16. chair	36. man	56. hospital
17. screen	37. taxes	57. girl friend
18. penis	38. nipple	58. taxi
19. radiator	39. doctor	59. intercourse
20. frame	40. dirt	60. hunger

and time of the responses, and timed-recall are used with the list. In addition, to clarify the responses an inquiry is carried on, for the most part taking place after the completion of the test.

In the scoring and the interpretation the following characteristics are delineated:

1. *Close reactions*, indicating a halting of the associative process in its "analytic phase." The following nine types of close reaction are distinguished:
 - a. stimulus-word repeated;
 - b. multi-word definition;
 - c. stimulus word with self-reference attached;
 - d. stimulus word repeated in word-combination or shortened form;
 - e. "image" of stimulus;
 - f. attribute of image (e.g. house-white);

* D. Rapaport, M. Gill, and R. Schafer, *Diagnostic psychological testing: the theory, statistical evaluation, and diagnostic application of a battery of tests*, Vol. II, (Chicago: Year Book Pubs., 1946), p. 84. By permission.

- g. senseless or sense-changing distortion or amendment;
- h. clang or alliterative;
- i. naming objects in the subject's presence;
- 2. *Distant reactions*, due to interference with the "synthetic process," of five types:
 - a. no apparent connection between stimulus- and reaction-words, and no explanation by the subject;
 - b. some faint apparent connection, but with no explanation by the subject;
 - c. apparent faint connection, explained by a vague, arbitrary, and sometimes absurd chain of connections;
 - d. idiosyncratic reaction;
 - e. loosely coordinated and superordinate generalizations among other close-to-polar reactions

Reactions under (a.) are called "unrelated distant" responses; under (b.), (c.), and (d.), "distant" responses; and under (e.), "mildly-distant" reactions;
- 3. *Content analysis*, noting especially:
 - a. the massing of disturbances in a specific group of stimuli, e.g. around words with an aggressive connotation;
 - b. unusual content in an individual response, especially if the response is accompanied by other association disturbances;
- 4. *Reproduction disturbances*—indicating the "degree of stability of thought organization";
- 5. *Traditional complex-indicators*, such as reaction-time, reproduction-time, failure to react, etc.

The findings in the use of this method of distinguishing between different clinical groups have been extracted from the text and summarized in Table VI.

Promising as the results of these experiments are, it must be remembered that the total number of cases—151—was decidedly small, so that the findings must be accepted tentatively until sufficient evidence on larger samplings can be obtained. The approach of Rapaport and his associates, which is apparently able to discriminate between these clinical groups, stands in marked contrast to previous applications of the word-association test based on content analysis (e.g., Murphy, 47, 48).

Although the word-association test will probably never attain the usefulness of many of the techniques to be discussed later, it may still continue to serve as a helpful supplement to other techniques in individual case studies (cf. Keir, 30; Rosenzweig and

Clark, 58; Shakow, Rodnick, and Lebeaux, 64; Waals, 74; Hutt, 23; and Holzberg, 18). It will retain a place in group studies, such as Carter's investigation of twin similarities (4) and Hunt's comparative study of word association and the Rorschach Test with 40 patients in the periods before and after prefrontal lobotomy (20), and in fulfilling special purposes, such as indicated by Goodenough (16), whose masculinity-femininity scale based on word association is illustrated in use by Smith (66). Another special application of word association, in vocational selection, is described by Shagass (63). A final use will be in therapy, as outlined by Meier (44), who found it useful in overcoming resistance to verbalization and to the acceptance of interpretations.

SUMMARY

The word-association test, with its long, respectable history, has shown a promise which has barely been fulfilled by the many experiments that have attempted to evaluate its practical usefulness. The majority of the studies of word association have been descriptive, i.e., showing the nature of responses to various word lists. While this descriptive work is necessary to the development of any technique of measurement, it should lead eventually to an understanding of the processes that produce the various responses. Word-association studies have lacked, generally, an adequate underlying theoretical basis. The unique value of the most recent work with word association is the provision of an hypothetical rationale for its method and interpretation. While the hypotheses are still tentative, they hold out the hope that the revival of interest in the test will realize "the potential fertility of the method" mentioned by Symonds (70).

TABLE VI
CHARACTERISTICS OF WORD-ASSOCIATION RESPONSES IN VARIOUS CLINICAL GROUPS
(After Rapaport, Gill, and Schafer, 54)

<i>Clinical classification</i>	<i>Close reactions</i>	<i>Distant reactions</i>	<i>Specific types of associations</i>	<i>Reaction time</i>	<i>Reproductions</i>
<i>Schizophrenic</i> a. Unclassified, paranoid, and simple, considered together.		Significant amount of distant reactions	Significant tendency toward clang associations and phrase completions. Multiword and blocking reactions frequent	Variability in reaction time: distant reactions relatively fast	More serious distortions than neurotics or normals
b. Deteriorated unclassified		Unrelated distant reactions	Blocking, clang, multiword	Extreme variability	Very inefficient—many false and unrelated reproduction attempts, tending to be more unacceptable than original reactions
c. Chronic		Exceed acute	Exceed acute in number of clang and self-reference		
d. Simple			Unrelated clang and perseverative responses		

<i>Paranoid conditions</i>		Relatively high, exceeding neurotics and normals	Tendency to definitions. Images, not in large amounts	No conspicuous disturbance	No conspicuous disturbance
<i>Preschizophrenics</i> a. Coarctated	High incidence		Fewer definitions than depressives. Accumulation of images, blocking, and repetition	No generalized slowness	Superior to depressives
b. Over-ideational		Resemble full-blown schizophrenia. Many distant and mildly distant reactions	Tendency to idiosyncratic, mildly distant reactions rather than unrelated ones; also show clang associations, phrase-completions, and emotional reactions. No accumulation of blocking, repetition, or various forms of closeness		Poorer than coarctated preschizophrenics. Prevalence of disturbances
<i>Depressives</i>	Massing of all types		Particularly definitions	Generalized slowness; variable but includes few quick responses	

TABLE VI (Continued)

<i>Clinical classification</i>	<i>Close reactions</i>	<i>Distant reactions</i>	<i>Specific types of associations</i>	<i>Reaction time</i>	<i>Reproductions</i>
a. Psychotic depressives	More than neurotic depressives	More than neurotic depressives	More forms of blocking		
<i>Neurotics</i> a. hysterics			Greater incidence of blocking, sometimes in failure to react and definitions.	Few extremely long reaction times — most characteristic form of blocking — usually to words of sexual connotation	Little disturbance
b. Anxiety and depression	Low incidence, excepting repetitions			Little disturbance	Orderly
c. Depressive		Tendency to accumulate mildly distant	Tendency to idiosyncratic but not far-fetched associations		

d. Obsessive-compulsives	Many mildly distant	High incidence of images; many idiosyncratic ideas		
e. Mixed	Greatest number of mildly distant among neurotics	Tendency toward images and definitions		
f. Neurotics, in general	Low incidence as compared with schizophrenics and depressives	Generally low incidence as compared with schizophrenics and depressives	More rapid and less variable than schizophrenics and depressives	Slightly inferior to neurotics, but significantly superior to schizophrenics and depressives. Least number of serious recall disturbances.
Normal (Patrolmen)	Highest incidence of popular or conventionally conceptually related reactions	Words of sexual connotation offer greatest difficulty	Shortest; most uniform	

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CHAPTER III

THE INCOMPLETE SENTENCES TEST

AN ALTERNATIVE method to word association, seemingly beginning with Payne (5) in 1928, is the Sentence Completion Test. As pointed out by Shor (10), the word-association test in clinical use proves to have many weaknesses. Chiefly, it leaves untapped too variable or too unknown an area of the subject's life-space or behavioral world, its single word responses are often difficult to analyze, and it is impractical for large-scale use since its method requires individual administration and may not provide information that cannot be more readily secured by other means. The Sentence Completion Test seems to overcome some of these deficiencies. It can be administered as a group test and, by adaptation of its stimulus phrases to an immediate situation, can provide a personalized medium for projection of significant themes. Its responses, being longer, provide more material for analysis than word association.

The test presents the subject with short phrases that may readily be completed to form whole sentences. An early form of the test¹ (11) included the following stimuli:

- | | |
|---------------------------|----------------------------------|
| 1. My hero is..... | 11. I feel proud when..... |
| 2. I get angry when..... | 12. I have a grudge against..... |
| 3. I feel happy when..... | 13. I become stubborn when.... |
| 4. I love..... | 14. I pity..... |
| 5. I hate..... | 15. I feel ashamed when..... |
| 6. I feel hurt when..... | 16. I am afraid when..... |
| 7. I worry over..... | 17. I like to..... |
| 8. I make believe..... | 18. I become disgusted with.... |
| 9. I feel sorry when..... | 19. I tell lies when..... |
| 10. I brag about..... | 20. I wish for..... |

¹ A. D. Tendler, A preliminary report on a test for emotional insight, *J. appl. Psychol.* (Washington, D. C.: Amer. Psychol. Ass.), 14 (1930), 123. By permission.

Tendler found that these part-sentences evoked different responses of varying lengths from different individuals, with significant scores in validation by comparison with an autobiographical character sketch and the Woodworth Personal Data Blank. The responses gave information on the satisfactions; annoyances, both general and specific; fears; aversions; likes; and interests and attachments, both positive and negative.

Rohde (6) and Hildreth revised and extended the Payne Sentence Completions Blank producing a test of 64 items which is copyrighted under their names. They selected their items on the basis of three criteria: 1. that the range of different stimuli must be broad enough to elicit information concerning all phases of personality; 2. that the responses must be controlled as little as possible by the stimulus phrases so that the subject may have freedom of expression, and 3. that the total time required for the test must not exceed a period convenient for schedules of schools and institutions. Validation study was carried on with 670 ninth-grade students averaging 15 years of age. One to four raters were used in addition to the author (Rohde) in establishing the reliability of scoring. Retest consistency after 8 months gave corrected coefficients (Spearman-Brown formula) of .82 with girls and .76 with boys.

Using a test of 40 items in the AAF Convalescent Hospital, Camp Davis, N. C., Rotter and Willerman (8) found a split-half reliability of $r = .85$ (corrected by Spearman-Brown formula). The interscorer reliability of 7 psychology assistants gave an average coefficient of .89. The validity was measured by comparison of the test results with a psychologist's judgment of the severity of disturbance as based on an initial interview and supplementary data, giving a coefficient of .61. A second test of interscorer reliability between two scorers produced a coefficient of correlation of .68. Measurement of the validity against the admitting diagnoses produced correlations of .41 and .39.

On the other hand, Lorge and Thorndike (4), testing a group of adults with 240 sentences to be completed in writing as fast as possible, found reliability by the split-half method to be very low. Their conclusion on the value of sentence completion was that, while everything a person does is revealing, these verbal replies

may reveal relatively little about a person's probable behavior toward *real* things, events, and relations. The results found in their experiment may be a reflection of the type of stimulus items they used. Several of the items included proper names, such as "(21.) John can; (61.) Fanny brought;" others were so impersonal as to bring forth little intimate material, such as "(1.) Animals are; (60.) Etchings are; (160.) On Main St. she met a". In addition, their results are a reflection of their technique of interpretation, which was to rate the bearing of sentences upon a list of seventy trait items, such as:

1. Interest in ideas and thoughts;
 2. Interest in things and mechanisms;
 3. Interest in people;
 4. Interest in animals;
 5. Interest in words;
 6. Liking for reading;
 7. Liking for mathematics;
 11. Liking for movement (coarse);
 12. Liking for movement (fine);
- etc.

The extensive research into child development reported by Sanford and others (9) contains reference to their use of a sentence-completion test of 30 items in combination with a Completion of Pictures Test and an Interpretations Test. Their stimuli were of three classes, following the concepts of need and press as developed by Murray. The first class consisted of a series of press. The given phrase or clause described an environmental situation or event affecting some actor and was so arranged that a grammatical completion gave an account of the actor's response, an action pattern that could usually be classified according to a scheme of needs. In the second class, the first part of the sentence described an action pattern of some need, so arranged that the completed sentence was to give the situation or event (press) which aroused the need. The third group was ambiguous, in that the action was incomplete or lacking in motivation and so constructed that the completion supplied the missing motive (need). With children from the third to the ninth grades the answers revealed consistent

patterns of response as well as responses of no significance. The differences of response, however, even to the same stimulus material, indicated fairly clear differences of personality.

A sentence-completion test of a different nature was developed by Wheeler (12) and named the Similes Test. The starting phrases contained 10 adjectives: "pathetic, incongruous, hot, artificial, conspicuous, meek, dangerous, delightful, exciting, deceptive." The subject was instructed to produce an original simile with each of these adjectives, in other words to complete the sentence, "As (.....) as" The responses were analyzed for content and for Intraception, i.e., the extent to which the subject was dominated by "feelings, fantasies, speculations and aspirations" (cf. 12, p. 747). In a number of cases both the responses to individual adjectives, such as the fears and anxieties called forth in response to "as dangerous as", and the occasional perseverating themes in the responses as a whole proved to be surprisingly revealing. The scoring on Intraception was chiefly quantitative (number of similes produced) but included a qualitative estimate of the stereotypy or originality of the similes.

One of the latest forms of the test was used in military service. Hutt (3) listed a sentence-completion test as among the variety of projective tests of value in Army hospitals. Shor (10) reported on the results of what he called the Self-Idea Completion Test in use in military psychiatric centers. The test, revised five times, consisted of 50 items suggesting feeling tones, qualities of attitude and specific objects or areas of attention. The stimuli were arranged in a definite sequence to permit a carry-over or generalization of attitude from immediate to basic human interests. Fifteen per cent of the items reflected the military situation; 35 per cent, feeling tones and attitudes frequently experienced in relation to military life and yet normally associated with civilian life; and 50 per cent, general life situations or attitudes. Shor suggested adapting the test to the particular situation in which it is to be applied, giving some attention to the sequence and distribution of the stimuli, planting shock absorbers, and developing a series of accelerating emotional involvement. He also found it useful in his own work to provide an opportunity for the patient to add

anything he might wish to say. To illustrate the careful planning necessary in devising the part-sentence stimuli, Form V of the Self-Idea Completion Test is quoted in full.

SELF-IDEA COMPLETION TEST, FORM V *

Complete these sentences to express your real feelings. Write down the first idea that comes to your mind. Each person will give different answers.

- | | |
|------------------------------|--|
| 1. I want to know..... | 27. I am best when..... |
| 2. I feel..... | 28. The only trouble..... |
| 3. At bedtime..... | 29. If only the Army..... |
| 4. Army food..... | 30. My greatest hope..... |
| 5. What annoys me..... | 31. I hate..... |
| 6. Back home | 32. I am very..... |
| 7. I regret | 33. Most officers |
| 8. The best | 34. This war..... |
| 9. Other people usually..... | 35. The future..... |
| 10. If my Mother | 36. This hospital..... |
| 11. What puzzles me..... | 37. My mind..... |
| 12. If I had my way..... | 38. I failed..... |
| 13. Most sergeants..... | 39. My education..... |
| 14. My ambition..... | 40. My old job..... |
| 15. My nerves | 41. I secretly..... |
| 16. When I was a child..... | 42. I cannot understand what makes me..... |
| 17. My greatest fear..... | 43. The worst pain..... |
| 18. My best friend..... | 44. Most girls..... |
| 19. The most dangerous..... | 45. My family never..... |
| 20. I suffer..... | 46. My most important decision was |
| 21. My father used to..... | 47. My greatest worry is..... |
| 22. I miss..... | 48. I object..... |
| 23. The men around here..... | 49. If only..... |
| 24. My strongest..... | 50. Today, I |
| 25. A wife..... | |
| 26. The happiest time..... | |

In analyzing the responses, Shor suggested looking for the gross variables evidenced, and listed six such variables: areas of rejection; evidences of resistance (blocking, suddenly conventional, or impersonal associations); other methods of evasion; recurrent themes; special or atypical associations; and generality

* J. Shor, Report on a verbal projective technique, *J. clin. Psychol.*, 2 (1946), p. 280-81. By permission.

or specificity of an attitude—the maintenance of a suggested emotional attitude (for the first stimulus in a group of five stimuli). Rohde (6) and Hildreth, on the other hand, used the scheme of need, inner states, and press in the interpretations of their sentences, determining the frequencies (number of occurrences) and intensities (on a 3-point scale, with 1, low; 2, average; and 3, high) of each particular need or press.

Rotter and Willerman (7, 8) scored their test, in many respects comparable to the Self-Idea Completion Test, by separating the responses into three categories: 1. conflict or unhealthy responses (+3 to +1); 2. positive or healthy responses (—1 to —3), and 3. neutral responses (zero). "Avoidance" was originally included in scoring but was later abandoned when it was found that it, along with neutral, humorous, or flippant responses, and omissions, was not strongly related to maladjustment. All test blanks with less than 16 responses were rejected as non-scorable.

The final score was arrived at by the formula $\frac{40 \times \text{score}}{40 - \text{omissions}}$, since omissions were not scored. In their article these authors have given scoring standards for each of their 40 items, developed with 45 patients (15 with serious psychiatric disorders with a history of premilitary maladjustment; 15 with no major premilitary disorders but severe combat disturbance; and 15 orthopedic patients with no serious psychological problems). Illustrative of these standards are Items 15 and 19, below. Their use makes possible a desirable approach to objectivity in scoring.

Item 15: "I can't....."

- | | | |
|----------|---|---|
| conflict | { | C3—watch people die; stand the army; sleep nights; concentrate; think straight. |
| | { | C2—sit still; stand hot weather; do much. |
| | { | C1—understand army inefficiency; do heavy lifting; express my thoughts. |
| neutral | | N—(do some specific skill like type or spell or mechanics). |
| positive | { | P1—complain; like this place; wait until I get married. |
| | { | P2—be in two places at one time. |
| | { | P3—..... |

Item 19: "Other people"

conflict	$\left\{ \begin{array}{l} \text{C3—laugh at me; are no good.} \\ \text{C2—talk too much; should mind their own business;} \\ \quad \text{annoy me; irritate me; I envy; get on my nerves;} \\ \quad \text{just have worries; are happier.} \\ \text{C1—have their worries too; are in the same boat.} \end{array} \right.$
neutral	N—are different; some good and some bad.
positive	$\left\{ \begin{array}{l} \text{P1—are entitled to their own opinions; get along with} \\ \quad \text{me; usually like me; amuse me.} \\ \text{P2—are O.K.; are friendly; are interesting.} \\ \text{P3—are swell.} \end{array} \right.$

The characteristics of schizophrenic and senile thought, as revealed by a short sentence-completion test of 15 items each ending with "because," were studied by Cameron (1, 2). Illustrations of the stimuli to which an oral reply was secured are:

- (1.) I am in the hospital because
- (2.) I am a man (woman) because
- (3.) A man fell down in the road because
- (4.) A fish can live in water because

His main findings were, first of all, that schizophrenic thought manifests a loose organization (asyndesis, or lack of synthesis), more or less relevant things placed together, material belonging to the periphery of a given thought-organization included, and sometimes scatter of thought by amplification. A second evidence is the peculiar use of unprecise, approximate terms, such as, in place of saying "he eats three times a day," using the phrase "he has menu." A third sign is the use of personal idioms, phrases, and terms which have a special meaning for the individual, such as calling the routine of daily work the "methodical business." In the fourth place, among the most seriously disorganized there is an intermingling of themes in which the problem of the patient is a predominant theme. Lastly, in comparing senile patients, children from 7 years and 2 months to 11 years and 5 months of age, normal adults and schizophrenics, he found that neither the schizophrenic nor the senile resembled normal adults or children, and that the characteristic features of schizophrenic thought were rare in seniles.

SUMMARY

As an improvement upon word-association tests, the completing of partial sentences has been suggested and tried. In general, the results have shown sentence completion to be a superior technique to word association in providing more material that is easier to interpret than single-word responses. Various methods of scoring and interpretation have been suggested. The reliability of responses and scoring, while not high, is within the limits of acceptability. The validity of the various forms of tests is not high enough to indicate that they may be used without other tests of a corroborative nature. Suggestions for the objectification of scoring may improve the tests in future applications. A major advantage of the tests is their suitability for group administration. The quality of the tests and interpretative methods used in the military situations suggests that development of comparable techniques for civilian purposes might provide clinicians with a simple and provocative instrument for personality diagnosis.

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CHAPTER IV

THE TAUTOPHONE TEST

IN 1936 Skinner (6) developed a method for the study of latent speech which he called the "verbal summator." This consisted of a set of phonograph records on which a series of vowel patterns were repeated. Rosenzweig and Shakow (4, 5), then at the Worcester State Hospital, adapted these records to the measurement of personality, naming the technique the Tautophone Test. They utilized records 5AM and 6AM of the Skinner series, which consisted of the following vowel combinations, each repeated ten times. In the list, long vowels, such as *ā* in *āle*, are indicated by capital letters; short vowels, such as *ă* in *căp*, by small letters, and the vocalization *uh*, by (*'*).¹

- | | | |
|-----------|------------|-------------|
| 1. "I'ah | 11. "ooO' | 21. aE" |
| 2. 'a'A | 12. "ia' | 22. 'ah'A' |
| 3. 'aO' | 13. EO''' | 23. "aI' |
| 4. "ahA | 14. 'oo'E | 24. Ia''' |
| 5. a'a' | 15. ahO''' | 25. 'A'O |
| 6. 'ahI'' | 16. A'E' | 26. 'II' |
| 7. 'O'a | 17. Eah''' | 27. 'oolI'' |
| 8. E'A' | 18. ah"ah | 28. ah'A' |
| 9. I'O | 19. "AE' | |
| 10. "OA' | 20. O"a | |

In use, the records are played to a subject at a low intensity and at some distance, so that an illusion might be built up that the subject is actually listening to human speech. Rosenzweig and Shakow had the subject recline on a couch; whereas Grings (1) seated the subject facing the phonograph at a distance of about 8 feet. Instructions to the subject requested reporting "what the man on the record is saying as soon as it can be understood." Each

¹ W. W. Grings, The verbal summator technique and abnormal mental states, *J. abnorm. soc. Psychol.* (Washington, D. C.: Amer. Psychol. Ass.), 37 (1942), 541. By permission.

vowel pattern is then played over and over to a maximum of ten times, until the subject gives a response.

A scoring system has been invented by Rosenzweig and Shakow (5), who analyzed each response according to five categories:

1. *The complexity of the structure of the sample:*
 - a. composed of syllables (SY),
 - b. composed of meaningful words (WM),
 - c. composed of non-meaningful words (WN),
 - d. composed of phrases (P), or,
 - e. composed of sentences (S).
2. *The similarity of the response to the sample:*
 - a. close (c), or,
 - b. remote (r).
3. *The non-English nature of the responses*—English, foreign words, or neologism; the proportion of the responses; if neologisms, are they assigned a meaning?
4. *The personal reference of the responses*—first (1), second (2), or, third (3) person used; samples without personal reference (4).
5. *The grammatical structure of the responses*—interrogative (?); imperative (!); or, declarative (.).

The interrelationships between the various scoring categories were recorded in a series of indices.

1. *The index of suggestibility*, indicating the degree of the acceptance of the suggestion that the samples are actually spoken words:

$$\frac{(S + P) - SY}{(S + P) + SY}$$

2. *The index of contact:*

$$\frac{(SYc + WNc) - (SYr + WNr)}{(SYc + WNc) + (SYr + WNr)}$$

3. *The index of human reference:*

$$\frac{(1 + 2 + 3) - 4}{(1 + 2 + 3) + 4}$$

4. *The index of self-reference:*

$$\frac{1 - (2 + 3)}{1 + (2 + 3)}$$

5. *The index of subjectivity:*

$$\frac{(\text{Pr} + \text{Sr}) - (\text{Pc} + \text{Sc})}{(\text{Pr} + \text{Sr}) + (\text{Pc} + \text{Sc})}$$

6. *The index of interrogativeness:*

$$\frac{P - S}{P + S}$$

7. *The percentage of non-meaningful responses.*8. *The relative length of the sample.*9. *The number of repetitions required in securing responses.*10. *The measure of perseveration:*

$$\frac{\text{Number of different words}}{\text{Total number of words}}$$

11. *The perseveration of themes:*

$$\frac{\text{Number of different themes}}{\text{Number of meaningful responses}}$$

12. *The qualitative or content measures:*

- a. the content words persistently repeated;
- b. the perseverating themes;
- c. the unusual responses, such as blocking, etc.

Shakow (4), Trussell (7), and Grings (1) have reported on the use of the Tautophone as a diagnostic procedure. Trussell investigated the ability of the test to differentiate between normals (32 University of Minnesota students) and abnormals (32 patients of varying diagnoses, including 10 psychoneurotics, 5 schizophrenics, 4 manic-depressives, depressed, 1 manic, 3 paranooids, 2 psychopathic personalities, 4 organic cases, and 2 feeble-minded). She found certain characteristics that distinguished the normal from the abnormal, namely:

1. the number of samples to which no responses were made (found only in the psychopathic group);
2. the number of meaningless responses (mean average of 18.62% in abnormals, as against 8.59% in normals);
3. the number of the syllables in the responses.

Little or no diagnostic value could be attributed to the amount of perseveration or to the mean number of repetitions necessary

to secure a response. The content was not found to reflect the occupational interests of the individuals and there was no significant variation in the mean percentages of egocentric responses. The abnormal group showed a greater average number of themes referred to more than four times and a higher individual frequency of perseveration of themes. Throughout the psychotics

TABLE VII

THE COMPARISON OF THE FORMAL CHARACTERISTICS OF RECORDS OF
DEPRESSED, SCHIZOPHRENIC, AND PSYCHONEUROTIC PATIENTS
ON THE TAUTOPHONE TEST

<i>Category</i>	<i>Depressed</i>	<i>Schizophrenic</i>	<i>Psychoneurotic</i>
1. No. of syllables	Maximum	High	Minimum
2. No of meaningful words	Maximum	—	Maximum
3. No. of non-meaningful words	Some	More	Lacking
4. No. of sentences	Minimal	—	High
5. Contact	Close	Lacking	High
6. Neologisms		Considerable	
7. Suggestibility	Minimal	Moderate	High
8. Human reference	Least	Highest	Moderate
9. Subjectivity	Minimum	High	Moderate
10. Interrogativeness	Maximum	Least	Moderate
11. Non-meaningful responses	Present	Highest	Lacking
12. Length of responses	Short (trend)		
13. No. of repetitions	—	Close to others	—
14. Perseveration of words	Minimal (trend)	Close to others	—
15. Perseveration of themes	Minimal (trend)	Somewhat higher	—
16. Qualitative	Concern for task Resistance	Lapses of attention Delay in responding Lack of concern	Skeptical Questioning

there was, in general, a significantly greater variability in the characteristics studied. No sex differences were noted.

Comparing the records of three groups of patients (24 schizophrenics, 18 psychoneurotics, and 15 manic-depressives, depressed type) Grings (1) found certain characteristics in each group. His results have been organized into Table VII.

Although the formal characteristics of the responses of the three groups proved discriminating, Grings found that the projective content which might have revealed conflict complexes was scarce and hard to analyze.

As a result of the experiment, Grings concluded that the Tautophone works better as a means of studying the characteristics of certain classes of personalities, for example, various abnormal and normal groups, than as an individual diagnostic instrument. His opinion was that in the latter use, nothing could be obtained that would not be as readily available through psychiatric interviews. In addition, he criticized the test as being difficult to interpret, since there was such wide individual variability of responses between single records. The time-consuming nature of the administration and interpretation of the test was set forth as a further factor in making it unsuitable as an individual test.

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CHAPTER V

STORYTELLING AND COMPLETION

LITERARY expression, whether oral or written, is so much an aspect of many other projective techniques that it is perhaps needless to introduce a special section for its consideration. The material developed in this chapter separates itself from the production of fantasies in response to visual and other sensory stimuli, such as the Murray pictures, chiefly by minor distinctions in the task assigned to a subject. The principles of interpretation applied in the Thematic Apperception Test and other picture-story methods might apply equally well to the analysis of the responses in the techniques here described. Such an intimate connection is manifest in the suggestions of Combs (3), whose methods for interpreting the Thematic Apperception Test stories and autobiography are the same. Separate consideration of the following methods is undertaken more as a formal convenience than because of basic distinctions in the methods. A further artificial sectioning has been introduced in the chapter by a division of the material into storytelling and story-completion techniques. The processes involved in the two forms of techniques are essentially the same, the only difference being the length and rigidity of the stimulus that initiates the fantasy.

STORYTELLING METHODS

With children, the most natural way to secure stories is to ask for oral composition. Despert and Potter (5) combined this and written composition with play and art techniques at the Psychiatric Institute in New York, evaluating their results by a study of 22 children from 4.0 to 13.11 years, most of whom were diagnosed as having primary behavior disorders (16 cases), some,

however, being psychoneurotic (4 cases), and two being psychotic (1 case with dementia praecox, hebephrenic type, and 1 case with epilepsy). The stories requested fell into three groups. The first of these were the popular stories (fairy tales) retold at the request of the physician, which included *The Big Bad Wolf*, *Goldilocks and the Three Bears*, and the "story you like best of all you have ever heard or read." The second group was composed of stories made up spontaneously by the patients on three themes given by the physician: any story the child wished to make up, a story about a boy (or a girl), and a story about a father, a mother, and as many children as desired. The third group was based on *The Story of John and Mary*, made up by the physician, told by the teacher to all the children, reproduced (in writing) for the teacher to provide a "formal version," and retold to the physician to give the "emotional version."

Examination of the material led to some important conclusions. A common theme, determined by the child's conflicts, was found to run through all the stories told by an individual child, even though sometimes the stories were totally mythical and at other times half-realistic and half-fantastic. The productivity of a child was shown to be no index of the intensity of fantasy life in the child since there may be meager verbalization with intense affectivity or in children with lower I.Q.'s. Girls produced less than boys, which strengthened the impression of the experimenter that there is a possible correlation between the amount of aggression and the productivity. Age influenced the stories. The younger children told more fragmentary narratives with greater emotional coloring than the older children, whose stories included a wealth of detail. The conventional stories were less provocative of significant material from the children and proved more difficult to interpret. In the final group of stories, the retelling of the physician's story, the formal version was relatively accurate; the emotional version was farther away from the original and approximated more closely the individual's emotional trends. On the basis of content, three major themes were produced: what the child is afraid of (anxiety), what the child wishes to be (wish-fulfillment), and what he fears he might do (sadism).

In a later study, comparing the attitudes of children to the

reality of fantasies, Despert (4) found three common evaluations, the first and most common, the denial of the character of reality to the story; the second, an evasion of the question; and the third, reiteration of the reality of the fantasy with apparent belief. The last, closest to schizophrenic thinking, was found most commonly in the emotionally disturbed of the 15 normal and 3 schizophrenic subjects. This led Despert to conclude that the fantasy found in schizophrenic children is dependent upon emotional factors and not upon characteristics inherent in their thought processes. This experiment adds to the evidence on the validity of interpreting fantasy material as being derived from emotional conflict.

A more controlled experiment, with a similar significance, was developed by Wright (16, 17), who created a moral conflict in 51 children and evaluated the effect of the conflict by analysis of play and of stories. She asked the subjects to rank 16 toys in four degrees of attractiveness. After rechecking the ranking on the following day, she presented the child with a choice of sending one of two toys (one very attractive, one least attractive) to a stranger who was not present. The child was permitted to play with the remaining toy. During the play he was asked which toy he thought his classmates would have given away, which they would have kept, which the fantasied stranger would have given to him, and which the other child would have wanted. Then the subject was asked to tell a story about one of the pair of toys previously offered for choice or one other the child had not seen before. Later the child chose another toy and made up a second story. Eight children placed in both non-conflict and conflict situations provided control data. The degrees of conflict manifested in the behavior of the children in the play situation and in the stories showed a correlation of $+ .43$, significant at the 1 per cent level. It was demonstrated, also, that after a conflict situation children tell stories that predominantly reflect conflict, such as punishment stories, destructive stories, and stories in which the undesirable toy given away is made the most attractive; whereas, in the non-conflict situation, the stories are different, mostly descriptive of, or realistically evaluating, the toys. The particular toy chosen and the content of the story also reflected

the conflict. A neutral toy was most often selected in conflict situations; the least-favored in non-conflict situations.

Experimenting with another variety of story, based on comic strips, described by Bender and Lourie (2) as the "folklore of the times," Haggard and Sargent (6, 7), in a short 20-minute interview, asked each of their subjects to list his favorite comic-strip characters, to describe what has been happening in these comics, and to act as "author" and create his own narrative around the characters. They suggested that the original selection of characters is probably significant of the child's fantasy life. One of the characteristics noted by the authors was the discrepancy between what the child wanted the hero to do and the newspaper version, called the "index of distortion." Haggard and Sargent described this as evidence of the degree to which a child has retreated into a private fantasy world as against having a realistic attitude toward his environment and his interpersonal relations. Additional modifications in method were suggested for further use. They proposed setting the action for the characters by providing a basic theme, such as "Dick Tracy at home," or asking the child to invent stories about characters he does not like. It was thought that not only would this type of storytelling be of diagnostic value, but also it would be of use in therapy, where it might act as a first step in the establishing of a transference, or as a "trouble shooter" in periods of resistance, or even as the means of expression and communication in a series of therapeutic sessions.

Storytelling is not limited in application to work with children. The Mayer and Mayer Dynamic Concept Test (10) utilizes this activity in work with adults. It asks for five stories that might reflect various aspects of an individual's adjustment. The first was a "story about a child five years of age and under," designed to bring out the oedipal and preoedipal strivings, conflicts, and adjustments. Next followed "the story of an ideal family," to reflect the extent and manner of resolution of the oedipal conflicts and of sibling rivalry tensions. The expression of latent or overt homosexuality was anticipated in the third story, "a story about best friends"; the revealing of heterosexual tendencies, in "a romantic story." The final story, "about a hero," was planned as a

projection of narcissistic tendencies. The authors found that the themes did not necessarily bring out the respective areas for which they were planned. The results varied with the individual personalities, the types of illness, and the severity of the disorders. They did follow, however, patterns fairly characteristic for the various mental disorders.

The stories were classified according to *function*, where the stories were pertinent to the suggested title, and where a situation was created and solved adequately, *partial function*, where the story was apropos to the subject matter and developed by means of descriptions, definitions, or descriptive narratives, and *dysfunction*, which included all other types of stories, refusals, changes in title, unresolved plots, rambling dissertations and presentation of animal characters in the main role. In the patient group with which this method was tried, 51 per cent of the stories revealed dysfunction and only 16 per cent function, whereas in the normal group, 3 out of the 5 subjects produced only stories showing function, and only 12 per cent of the total collection of stories evidenced dysfunction. Of the 33 patients, 11 produced dysfunction in the "story of a child of five years and under," 23 in the "story of best friends," and 30 in the "romantic story," a result which might have been anticipated theoretically, and which confirms partially the anticipation that the stories would reflect various stages of development.

An experiment on the reliability of written compositions was reported by Allport, Walker, and Lathers (1). Nine themes from each of 70 students were matched successfully with an anonymous theme by each of the subjects, to yield a coefficient of correlation of $+.60 \pm .062$.

Kunze contributed a storytelling method, called the Musical Reverie Test to the collaborative investigation of fantasy by Murray and his associates (12). A phonograph, covered with a heavy cloth to reduce mechanical noise, played certain selections for the subject, who was told that the experimenter was interested in music and trying to discover the images and themes associated with music. Six selections were regularly played:

1. *Symphony No. 4 in F. minor*, by Tchaikowsky, which usually suggested fear, agitation, mental or physical struggle;

2. The last part of the second movement of *Don Juan* by Strauss, bringing to mind love scenes and sentimental or romantic settings;
3. The last movement of the *Symphony No. 6 in B minor (Pathétique)* by Tchaikowsky, calling up fantasies of tragedy, despair and death;
4. The closing movement of the *Quintet in G minor* by Mozart, suggesting happy, light-hearted, animated action;
5. *Death and Transfiguration* by Richard Strauss, inducing moods of reverence and solemnity or ideas of regeneration;
6. *Afternoon of a Faun* by Debussy, which seemed to facilitate reminiscing and philosophizing.

Occasionally other similar records were used as they seemed appropriate. Two kinds of mental processes were noted by Kunze: free associations and thematic organized fantasies, of which the latter were more valuable for diagnostic purposes.

The Odor Imagination Test as a method of producing fantasies was also described by Murray (11). In this test a blind-folded subject is given the following instructions:

I am going to let you smell various odors. As I present each of them to you I want you to invent a short anecdote or episode suggested by the odor. Please try to develop your story from the first association that comes to mind.

The following odors were presented: ginger, sage, soap and water, acetone, tobacco, art gum eraser, violet perfume, whiskey, sulphonaphthol, Worcestershire sauce, pine, spearmint, denatured alcohol, vinegar, germicide, sweet starch, benzoine, asafoetida, carbon tetrachloride, hydrogen sulphide gas, after-shave lotion, shellac, salad oil, sour milk, and oil of cloves. No results of the use of this test have been published.

STORY-COMPLETION TESTS

As sentence completion is superior to word association, we might expect that story completion would prove superior to sentence completion. The major advantage of completing a story rather than a sentence is the length of the response we might expect to receive, which provides us with more analyzable material. This advantage is countered, however, by the greater limi-

tations the story imposes upon the spontaneous self-expression of the subject. The stimulus is too rigidly structured. The problem facing a psychologist, then, who would construct a story-completion test, is to give the subject as unstructured a stimulus as possible with only the barest essentials necessary to induce fantasy and without suggestion as to the ending.

Murray (11, 12) reports on two patterns of stimulus stories for use in his studies with college students. The first, developed by L. C. Lewin, most nearly approaches the criteria for a suitable test of this kind, and is superior as a projective device, even with its noticeable limitations, to all other story-completion tests with one exception, the paper-and-pencil test of Sargent which is similar to it in many ways. Murray called it the Story Elaboration Test. It consisted of 32 different dramatic situations, each of which was to be developed into a skeleton for a short story. The following are examples of the starters:

- (1.) A sick man is becoming a burden to his family. They would like to get rid of him.
- (3.) A man was found shot to death. The evidence tended to show that it was done by himself or someone in his immediate family.
- (17.) A clergyman, after thirty years of service, is obsessed by feelings of worthlessness and futility.

The second form of test created by D. R. Wheeler was called the Literary Composition Test. Each student was given an hour to write a narrative based on an outline of Hawthorne's story *The Minister's Black Veil*. The instructions for the test were:

One of Hawthorne's short stories tells of a minister who, after many years with his congregation, appears in the pulpit one Sunday morning wearing a black veil over his face, and for a long time thereafter is never seen without it. You are to take this idea as a nucleus for a story of your own. You may develop it in any way you please and make any modifications you desire. Plan to spend about forty-five minutes on it. This exercise is to test the extent of your literary imagination.

Each of these tests was evaluated according to Murray's scheme of need, press, and thema. It is especially evident from the second test, but also true to a lesser extent of the first, that application of these test methods could not be universal. They would

be most effective with the limited group of superior endowment and education. Experience has shown, also, that these tests are not as successful in evoking fantasy material as pictures, such as the Thematic Apperception Test.

Another type of story completion, likewise of limited applicability, is illustrated by Zucker's (18) method of exploring the emotional attachment of children to their parents. By its means, 25 delinquent boys averaging 13.5 years of age, from below average socioeconomic backgrounds and with average Kent I.Q.'s of 96.2 were compared with a matched group of non-delinquent boys. Zucker presented each subject with three part-stories, each involving a conflict situation, and instructed the boys to "finish them, put an ending on them." The first story was as follows:

It was a bright sunny day and Frankie was in his drawing class painting a small house. Just then a monitor walked in and Frankie was called to the principal's office. As he came in the principal said: "We just got a call from your home, Frankie. Your parents have had a pretty bad accident. You may leave for home at once if you want to." But, just as Frankie was leaving, the telephone rang and the principal answered. Then he called out, "Just a minute, Frankie. Your best friend was just hit by an auto and needs an immediate blood transfusion. They want you to get down to the hospital right away." Then . . .¹

Story II sought to get at the relative strength of parental versus play-group injunctions and involved a theater scene with a boy on the stage faced with the problem of choosing between a prize in a red box and a prize in a green box. The parents shouted "green," and the friends, "red." The third story was to check on the effectiveness of parental moralization. A boy, Jim, had been caught stealing and was given a lecture by his father. Two weeks later Jim and his friend were walking down the street and the friend suggested stealing.

Zucker found that the choices of the subjects in the first and third stories were significant in differentiating between the delinquents and the non-delinquents, in spite of the fact that almost half of the delinquent group was committed for offenses other

¹ H. Zucker, The emotional attachment of children to their parents as related to standards of behavior and delinquency, *J. Psychol.*, 15 (1943), 34. By permission.

than stealing. The correlation between the replies to stories I and III was $.90 \pm .03$, which must certainly be considered a high score. Zucker's technique, however, is obviously of more importance as a research than as a diagnostic tool.

In a sense this method approaches in type the multiple-choice story-completion methods of Kelly and Bishop (9) and Roody (13). The personality inventory of the former consists of a series of story plots in which the subject selects the solution of the conflict. Roody presented to her subjects ten plot germs with five endings listed for each, which the subjects were to number in order of probability as outcomes and then to check according to the one that made the best story regardless of probability. Although presented to the pupils as a test of literary ability, it revealed itself as capable of bringing out a number of attitudes that might prevent proper evaluation of the solutions, such as the desire for a happy ending, the desire to reward a likable person, a morbid preference for unhappy outcomes, rejection of a given problem and substitution of an easier one, and a superstitious willingness to credit mystical mental powers and other unscientific beliefs. Measurement of the reliability by the split-half method gave a coefficient of .72 (corrected by the Spearman-Brown formula, .835) and an index of reliability of .914.

The completion test by Sargent (14), mentioned previously as being like Murray's Story Elaboration Test, was an attempt to answer a list of questions: Can a paper-and-pencil test be devised to meet the requirements for projective techniques of neutrality, meaninglessness, and disguised purpose which at the same time will call forth a significant response from a subject? Will the responses so produced reveal individual differences? Can a scoring system be evolved capable of identifying and objectifying the differences observed? Can the scoring system be used reliably by different scorers and interpreters? Can the information be established as valid? And can the interpretative material lead to meaningful patterns clarifying the clinical pictures of a single individual in terms of both inter- and intra-individual comparisons? (Such a list is a succinct statement of the criteria for evaluating projective techniques.) The Test of Insight into Human Motives is the trial answer to these questions, the devising of

which was a model of careful test construction. The test includes 15 items describing persons in a conflict situation on which the subject is asked to write answers including: "What did he (or she) do and why?" and "How did he (or she) feel?" The criteria for these test items were: ²

1. the situation must present a conflict calling for some kind of action;
2. a minimum of emotion should be implied on the part of the characters;
3. the characteristics of the imaginary persons should not be described, except as their actions may imply them;
4. as far as possible, the use of situations which suggest an answer in terms of popular stereotypes should be avoided;
5. proper names should not be used for the characters.

Applying these criteria to a large number of suggested items, Sargent created four forms of the test, each consisting of 15 items, two of which are illustrated: ³

Form I, Men:

1. A young man who is working or studying away from home gets a letter from his mother, after the death of his father, asking him to move back home.
 - a. What did he do and why?
 - b. How did he feel?
2. A young man has acquired religious and political opinions away from home which are in direct conflict with his parents' ideas. He is home for a visit and religious and political subjects are discussed.
 - a. What did he do and why?
 - b. How did he feel?

These were administered to 65 subjects (45 Northwestern University students and 20 patients at Elgin State Hospital).

The scoring categories were developed empirically and are listed here without definition: ⁴

² H. Sargent, An experimental application of projective principles to a paper and pencil personality test, *Psychol. Monogr.* (Washington, D. C.: Amer. Psychol. Ass.), 57, no. 5 (1944), 4b. By permission.

³ *Ibid.*, Appendix A, p. 31b. By permission.

⁴ *Ibid.*, p. 12. By permission.

I. *Single Scoring Categories:*

A. "Normal" feeling:

1. Frustration;
3. Submission, dependence;
4. Avoidance, escape;
5. Depression;
6. Pleasure, elation;
7. Negative attitudes;
8. Positive attitudes;
9. Anxiety and conflict;
10. Rationalized feeling.

B. Cognitive expressions:

- El. Elaboration;
- Ev. Evaluation;
- Q. Qualification.

C. Indicators:

- 2. Irrelevant feeling;
- S. Subjectivism;
- P. First person pronouns.

D. Conflict solutions:

- At. Attack;
- Re. Resistance;
- Ac. Acceptance;
- Cp. Compromise;
- Es. Escape, retreat;
- Cf. Conflict, confusion;
- RF. Reaction-formation;
- Ex. Exploration;
- Un. Unreal solution;
- O. No solution.

II. *Combined Scores:*

A. Totals per armature:

- F. Total "normal" feeling score;
- C. Total cognitive score;
- I. Total indicator score.

B. Ranges:

- FR. F range (lowest to highest per armature score);
- CR. C range (lowest to highest);
- IR. I range (lowest to highest).

C. "Zero" scores:

- OC. Number of "normal" feeling categories not scored;
- OA. Number of armatures receiving no feeling score;
- NA. Number of armatures answered;
- F/C. Ratio of F total to C total.

Four experiments were undertaken to check on the reliability of the scoring categories, and before developing the total scores an effort to equate the stimulus value of the armatures themselves in producing scores was made by a system of weighting.

The main conclusions of the experiment were as follows:

1. More than half of the questions varied in their tendency to produce different types of affective expression. The neutrality of items cannot be assumed without a check;
2. Inconsistencies in the patterns of normal subjects who repeated the test emphasize the fact that one small sample of thought content is insufficient for personality analysis;
3. The reliability of the scoring system was reasonably satisfactory;
4. Simplification and greater effectiveness of the test appear feasible to achieve;
5. There were certain significant differences between papers written by mental patients and college students:
 - a. The patients, as a group, included proportionately a smaller number of feeling expressions of all kinds except "irrelevant feeling";
 - b. The patient group did not differ from the college group in amount of elaborative, evaluative, or qualificatory expressions, but did significantly differ in the ratio between feeling and cognitive scores. The mean F/C quotient for the mental patients was markedly lower;
 - c. The following were isolated as maladjustment indicators: irrelevant feeling, subjectivism, and excessive use of the first person pronouns. If the last appeared more than four times, the record was, without exception, associated with maladjustment;
6. There was strong evidence that the mechanism of projection operates in a paper-and-pencil situation of the type used.

Sargent concluded, in general, that the Insight Test seemed sufficiently promising to warrant additional experimentation.

Thomas (15) also found the story-completion method to have merit. He preferred it to word association in bringing forth more content, and to free association in being more directed. His stories were used in an interview situation with children. Typical of his story-frames are:

1. A boy goes to school. In the recess he does not play with the other children but stays alone in a corner. Why? (trans.)
2. A boy is having a fight with his brother; mother comes, then what happens? (trans.)

He evaluated the responses according to:

1. The comprehension of the task;
2. The adaptation to that task;
3. The identification of the child with the figure in the story;
4. The objectification of the child's conflicts in the story;
5. The resistances to the development of themes.

Apart from the diagnostic significance of the stories, Thomas points out their effectiveness in building rapport, as a prelude to therapy.

SUMMARY

Storytelling and story-completion methods have been separated from oral or written fantasies produced by other types of stimuli as a matter of convenience. The common element in the techniques suggested is the provision of a theme for elaboration. This approach has been used with both children and adults with some effectiveness, although the studies with each technique are so limited that it may be said that they have not progressed beyond the exploratory stages.

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PART II

VISUAL STIMULUS TECHNIQUES

CHAPTER VI

THE RORSCHACH TECHNIQUE

THE USE of inkblots in personality diagnosis begins with the efforts of a Swiss psychiatrist, Hermann Rorschach, to discover a practical and simple method of differential diagnosis. His investigations were started in 1911 and culminated in the publication, in 1921, of his *Psychodiagnostics* (617), a monumental and highly-original contribution to personality diagnosis. The extent of Rorschach's contribution is indicated by the fact that the major elements of administration, scoring, and interpretation, which were conceived and developed by him, still continue to be used to a great extent in the same manner as proposed. Beyond developing the test, Rorschach applied it to many clinical groups and presented findings which, for the most part, have been confirmed by later and more extensive research. It is fortunate for psychology and psychiatry that the monograph giving his results had been completed just before his untimely death in 1922 at the age of thirty-seven.

Although Rorschach was the first to develop a technique for using inkblots in personality diagnosis, other experimenters had used them for other purposes both before and after his research. In 1857, Kerner (379) noticed the way in which accidental inkblots assumed various forms. Rosenzweig (624) has drawn attention to a children's game based on inkblots and published in 1896. In 1895, Binet and Henri (68) suggested using inkblots in the study of imagination. Dearborn (136), in 1897, proposed several uses of inkblots in experimental psychology and reported on some of his studies in 1898 (137). Inkblots were used, mostly in studies of imagination, by Sharp (683), Kirkpatrick (383), Pyle (582, 583, 584), Whipple (766), Bartlett (24), Parsons (534), and Lundholm (469). A review of the pre-Rorschach use of inkblots has been written by Tulchin (731), and a discussion

of the historical development of the Rorschach technique will be found in the manual by Klopfer and Kelley (409), and in articles by Beck (43, 52) and by Krugman (426, 427).

ADMINISTRATION

The standardized materials for the Rorschach Test were developed empirically and consist of 10 printed plates reproducing bisymmetrical inkblots selected from a large number—estimated at thousands by Klopfer (409)—of blots created by Rorschach. Although Rorschach used other comparable sets, the plates printed to accompany *Psychodiagnostiks* are the only ones that have been preserved. Behn-Eschenburg (cf. 798), and Harrower-Erickson (261) have published alternate forms of the test materials which are in limited use (486).

The administration of the test is relatively well standardized. Most authorities recommend that the subject be put at ease by establishing a good rapport before the test begins (e.g., 39, 50, 77, 409, 463, 464), although Rorschach did not stress the necessity of this beyond mentioning that occasionally showing a suspicious subject how the blot is created might be necessary. Hertz (276) provided the subject with a trial blot before giving the test proper. Schneider (673) exposed the first card during the giving of the instructions for the test. The majority of experimenters resist disturbing the sequence of the 10 cards by showing a trial blot or the first card as a rapport-building device.

Beck (39, 50) requires and Klopfer (409) prefers that the subject be seated so that both he and the examiner may observe the plates, with the examiner slightly behind him so that he will not be distracted by the recording. Rapaport, Gill, and Schafer (592) prefer to face the subject so that they may observe his reactions more carefully and not introduce a test procedure different from that used in other tests. Loosli-Usteri (463) claims that giving the test under artificial illumination distorts the color values, but other experimenters do not make a point of this. A study by Brosin and Fromm (102) on the effects of color blindness on Rorschach performances, in which they found that the validity of the test was not destroyed in their color-blind subjects,

would seem by inference to discount the importance of the illumination. Each plate is given to the subject in turn for him to hold, care being taken that none of the other blots are exposed during the period when he is giving responses. Beck asks the subject to return a card to him when he has finished; Klopfer, to turn the card face down on the table. Experimentally, Hertz set a time limit of 2 minutes per card (276), although most administrators impose no time limit.

The instructions to the subject are simple. Rorschach (617) asked, "What might this be?" Beck (50) suggests:

Look at each card, and tell the examiner what you see on each card, or anything that might be represented there. Look at each card as long as you like; only be sure to tell the examiner everything you see on the card as you look at it.

Klopfer (409) feels that these instructions emphasize productivity in such a way as to restrict the subject, and so he asks:

People see all sorts of things in these ink-blot pictures; now tell me what you see, what it might be for you, what it makes you think of.

Rapaport, Gill, and Schafer (592) follow Beck in encouraging a subject to give more than one response to a card, discontinuing such a suggestion after the first card. Beck does not urge responses after the fifth card. Klopfer, on the other hand, leaves the subject free to respond as he chooses, following Rorschach's advice that "coercion should be avoided as much as possible."

During the test the examiner attempts to record all verbalizations of the subject word-for-word, the time up to the first response for each card (reaction time), the length of time during any long pauses between responses, the total time the subject holds each card (response time), the position of the card during the responses, and behavior notes based on extraneous movements of the subject. In recording the position of the card most examiners follow the system developed by Loosli-Usteri (458) in which the points of arrows (\wedge $>$ \vee $<$) indicate the top of the card in the various positions. A spiral (\odot) to indicate repeated turning was later added. Some experimenters use silent

stop watches, others ordinary watches, and others estimate time to the nearest 5 seconds.

The goal in the administration is to secure as much material as is possible with as few suggestions as necessary. Thus, all questions by the subject about turning the cards, the number of responses, and the quality of the responses are routinely answered by "It's up to you," or an equivalent phrase. No prompting on the part of the examiner as to the technique of responding or as to the purposes of the test is offered before or during the performance proper; nor may the examiner ask direct questions about the responses or comment on the responses themselves. Occasional remarks, non-specific to the individual responses, by way of easing tension may be offered between cards, but usually these remarks are reduced to a minimum after the first few cards.

A second phase is the inquiry, usually conducted after responses to all ten cards. In an experiment on test administration Hertz (276) conducted this questioning after the presentation of each card, as did Rapaport, Gill, and Schafer (592), except when dealing with extremely cautious, ill-at-ease patients. The function of the inquiry is chiefly to find out how the subject has perceived the blot in developing individual responses, thus facilitating the scoring. It serves a second function in permitting the subject to clarify or to add responses spontaneously. In finding out what elements of the blot have entered into the formulation of a response only the most indirect questioning may be used. To ask direct questions might give clues to the subject as to the elements of the responses in which the examiner is interested, leading to replies that do not represent the subject's experiences of the blot but rather what he thinks the examiner is expecting. The only exception to this principle of indirection is in inquiry as to the location of the responses. Here a subject may be asked to trace his response with finger or pointer (Beck, 50), occasionally to outline the area on small-sized black-and-white reproductions of the blots (Klopfer and Davidson, 406), to circle the area on a mimeographed outline of the blots (Vernon, 745), to identify the area on charts numbered according to the areas frequently used (Hertz, 276, 287), or to indicate the area through a transparent plastic sheet marked off into squares

(Fleischer and Hunt, 170). As to all other determinants that might have entered into the production of the response, the effort is made to gain reference to them without the examiner's revealing his particular needs for scoring. While some authorities suggest scoring while the test is in progress (e.g., 592), most postpone scoring until the completion of the whole test so that even the symbols used in scoring may not influence the description of the responses. In addition to the development of skill in subtle questioning, it is essential for an examiner who would conduct a successful inquiry to have a thorough knowledge of the scoring of responses, so that he may know what elements may enter into the formulation of a response and be able to identify them as they are produced.

Klopfer has introduced a third, somewhat optional aspect to the administration which he calls "testing-the-limits." This phase yields information which is not utilized in scoring, but which is of critical importance in the interpretative evaluation of the record. Hutt and Shor (327) developed the "testing-the-limits" into a routine procedure in the test. In this period direct questioning is permitted for the purpose of measuring the subject's reactions under pressure. The first aim is the clarification of the responses, although as emphasized by Klopfer the information thus received is not scored. The second aim is to explore the capacity of the subject to utilize blot elements that he has not spontaneously reacted to during the performance proper. Thus, if a subject has not given a response to a whole blot, but has chosen to use only portions of it, his capacity to see forms in the whole is measured by the direct suggestion that he respond to the whole or that he identify a common whole response in a card. In a similar fashion, his ability to use other determinants may be explored, as well as the causes for his failure to use them spontaneously.

Hutt and Shor have introduced the following techniques into the "testing-the-limits":

1. Grouping the ten cards, "placing those cards together which belong together," in as many categories as the subject chooses. Evaluation is made of the blot elements used for such groupings and is scored according to the symbols used for these respective elements.

2. The measuring of the ability of the subject to accept popular concepts. Hutt and Shor use the list of twenty most common responses developed by Beck (50) and suggest those not previously used by the subject. Three successive levels of suggestion are used in a sympathetic and non-critical manner:
 - a. Level I: "Some people see a " in this card. "Can you make it out?" If the subject recognizes the response, he is questioned as to how he sees it and the response is scored;
 - b. Level II: (After failure at Level I) "Well, this is where they see it (indicating the area). Can you see it now?" If the response is seen, inquiry and scoring follow;
 - c. Level III: (After failure at Level II) "You see here are the (indicating some, but not all the aspects of the form)." If the subject now recognizes the form, further inquiry and scoring is made.
3. Further analysis, used if a deeper study is indicated, by:
 - a. asking the subject to find as many male and female sexual organs in the cards as possible;
 - b. asking the subject to associate as many responses as possible to large and small usual detail areas pointed out by the examiner;
 - c. asking him to divide the cards into three groups: "those you rather like to look at; those you dislike looking at; and those about which you don't care one way or the other," and then questioning as to the reasons for the attitudes.

Hutt and Shor reported that in their military experiences the "testing-the-limits" proved of especial value in the prediction of outcomes of therapy.

Another recent development of the inquiry phase of the test is the Graphic Rorschach, apparently first used experimentally by Roemer (614), but developed chiefly by Levine (439-441) and Grassi (213-214), and used by Goldfarb (201), Rochlin (606), and Paster (535). This method consists of asking the subject to draw what he has perceived in making his responses, giving him blank sheets of paper and one black and seven colored pencils. He is told that he does not have to reproduce the blot but may change it in any manner he wishes to make his drawing conform with the object he saw, and that he may or may not use the color as he wishes. In addition to offering a scoring check, especially on the quality of the form of the response or on the use of color, the drawing has been used by Levine and

Grassi as a diagnostic technique independent of the verbal responses, except as they provide the basis for the drawings.

In scoring the drawings, Levine and Grassi have constructed five 5-point scales, each one of which is used in ranking each single drawing:

- Scale I. The use of the contours of the blot in the drawings;
- Scale II. The use of the areas or natural divisions of the blots;
- Scale III. The treatment of the actual form of the blot;
- Scale IV. The use of the color of the blot;
- Scale V. The ornamentation of the blot stimulus features by additions.

Each scale permits ranking from one extreme, blot-dominance, in which an individual rigidly adheres to the actual nature of the blot in his drawing, to the other extreme, concept-dominance, where the actual features of the blot are disregarded and the concept is reproduced without evident use of the blot characteristics. The average, well-adjusted individual usually compromises between these extremes, preserving some of the blot features in his drawing but altering them in minor ways to make them appropriate to his ideas.

Another modification of inquiry technique is in the securing of free associations to the content of the responses. Systematic development of this method has been started by Janis and Janis (337). These experimenters secured chained associations, where possible, to the content in both the performance and the inquiry of each of the responses. Although their preliminary report only dealt with the findings in 25 cases, they felt that the free-association technique could confirm and amplify interpretations made on the basis of the traditional use of the test, could assist in content analysis, and could provide independent material for personality diagnosis.

SCORING

The genius of Rorschach showed itself in his recognition that factors other than content were probably significant for personality diagnosis. The description of these other factors, a technique of scoring them, and basic experimentation in the way of estab-

lishing their interpretative meaning were all accomplished by Rorschach. The scoring system, as developed then, forms the central core of the majority of scoring techniques used later, although many other authors have elaborated upon it.

Rorschach scored four major categories in his method: (1.) the *location* of the concept in the area of the blot used; (2.) the *determinants* or characteristics of the blot used by the subject in constructing a response, such as the form, the color, the movement properties, and the shading; 3. the *content*, and 4. the *popularity* or *originality* of the response. To each of the scored items he gave a symbol, usually an abbreviation of the German word describing the item. Rorschach's symbols, with brief descriptions of their meaning are given in Table VIII, which also presents the other-than-German equivalents used by experimenters, as well as the new symbols introduced by later workers with the test.

SCORING PROBLEMS

The multiplication of symbols has by no means solved all the scoring difficulties involved in the test. While there is an encouraging uniformity in the acceptance of a majority of the symbols, especially those which have a direct basis in the work of Rorschach, there is considerable variety in the definition of some of the concepts implied in them. There is also much discrepancy among the scoring practices of various workers. This can best be illustrated by the reader's contrasting the manuals of Rorschach (617), Beck (50, 53), Klopfer (409) and the various articles of Hertz (272-308). Differences have to a large measure been resolving themselves, however, through discussion and clarification of the scoring issues. In providing a means of communication among workers, the Rorschach Research Exchange has made a significant contribution to this resolution of differences. Also contributing to the reduction of divergent points of view has been the evidence for the validity of many of the differentiations suggested. A third contributing factor is that harmony among the personality diagnoses produced by the various scoring methods has built up an atmosphere sympathetic to the acceptance of alternate methods of scoring. Since many roads appear to have

led to the same goal, most examiners have developed an experimental attitude toward the trying of new ways. Some, of course, have only been confirmed in their own methods by the success of their interpretations. Some critical scoring problems have been only partially met; some have not been satisfactorily solved as yet.

Location. Standardization of the location categories is on the increase. This is especially noticeable with the whole responses, which, in any case, are among the easiest to score. With the exception of the "two human figures" in Card III, which are scored by Rorschach, Oberholzer, and most European examiners as *W*, by Beck as *D*, and by Klopfer as *W̄*, the complete wholes are readily identifiable. There is, also, a close comparison in the techniques of scoring combined wholes, whether successful combinations or confabulated wholes, although the symbols remain diverse. Klopfer's qualitative distinctions of wholes as arbitrary *W*'s, inaccurate, unorganized *W*'s, unelaborated, fairly accurate outline *W*'s, crude determinant *W*'s, organized popular *W*'s, and superior *W* constructions parallels closely the "g" scores of Hertz or the *Z* scores of Beck. The major disagreement concerning wholes is in the use of the cut-off whole, *W̄*, and tendency-to-*W* scores, which are rejected by Beck as unnecessary, although his decision is based in part on a misreading of Klopfer (cf. Klopfer, 409, p. 87, and Beck, 50, p. 27).

The major difficulty in scoring location responses, as yet not completely solved, is in the scoring of the normal details. The primary difficulty in reaching a standard for *D* is in definition of what constitutes a normal detail. Rorschach described these responses as "those details which, because of their position in the figure, are the most striking. One can define them statistically . . . but the procedure is unnecessary because after the test has been given to 50 normals one knows most of the normal details" (617, p. 39). The various interpretations of this statement have led to several approaches in the distinguishing of the *D*'s. Klopfer and Rickers (679) developed a list of *D*'s based upon qualitative evaluation of the "strikingness" of the details in the blots. They intended their list to serve as a starting point for statistical studies of frequency, arguing that "before we start counting we have to know what we want to count" (398, p. 47). Beck, on the other

TABLE VIII
GERMAN, FRENCH, AND ENGLISH SCORING SYMBOLS WITH BRIEF DEFINITIONS *

German	French	English	Definitions
Antw	R	R	The total number of responses
	T	T	Total time
	$\frac{T}{R}$	$\frac{T}{R}$ (Av. T(R))	Average time per response (response time)
		Tot. R.T.(1) (Ch)	Total initial reaction time in black-gray cards—I, IV, V, VI, VII
		Av. R.T.(1) (Ch)	Average initial reaction time for black-gray series: $\frac{\text{Tot. R.T.}(1) \text{ (Ch)}}{5}$
			(Symbol T _a , for reaction time to achromatic cards, has been suggested.)
		Tot. R.T.(1) (C)	Total initial reaction time in color cards —II, III, VIII, IX, X
		Av. R.T.(1) (C)	Average initial reaction time for color series: $\frac{\text{Tot. R.T.}(1) \text{ (C)}}{5}$
			(Symbol T _c , for reaction time to chromatic cards, has been suggested.)
		Tot. R.T.(1)	Total initial reaction time in all 10 cards

<i>Location (Mode of apperception)</i>		<i>Av. R.T. (1)</i>	<i>Average initial reaction time for all 10 cards: $\frac{\text{Tot. R.T. (1)}}{10}$</i>
G	G	SHOCK	Cards where the initial reaction time is longer than the average plus one average deviation: (Av. R.T. (1) + 1 A.D.)
		Q	Cards where the initial reaction time is shorter than the average minus one average deviation: (Av. R.T. (1) - 1 A.D.)
		Av. T(B)	Average time per blot: $\frac{T}{10}$
dG		FAIL REJ	Failure to respond to a card, or rejection
		W	Whole blot used for interpretation
	DG	W DW	Cut-off whole (a small portion of whole omitted), (Klopfer) Confabulatory response: a meaning assigned to the whole on the basis of an interpretation of a detail

* Except where specified, the German symbols are Rorschach's own.

TABLE VIII (Continued)

<i>German</i>	<i>French</i>	<i>English</i>	<i>Definitions</i>
		DW (combinatory)	Whole response where several details are successfully combined to produce a whole (Hertz)
		DW or DrW (confabulatory)	Response to the figure as a whole, assumed from the interpretation of a detail (Hertz)
		DW or DrW (contaminated)	Response to the whole figure, two different interpretations being given to the same blot or to the same area of a blot, which are combined into a confused or absurd whole (Hertz)
		DdD	Counterpart of DW, using rare detail to assign meaning to normal detail (Beck)
		D → W	Detail response with a tendency toward a whole interpretation (Klopfer)
D	D	D	A normal detail of the blot
		d	Small normal detail (Klopfer)
Dd	Dd	Dd	Small infrequently used detail
		de	Edge detail (Klopfer)

Do	Do	dr di Do	Rare small detail (Hertz, Klopfer) Inside detail (Klopfer) Oligophrenic detail (cf. 334) Choice of a small area of a body where an individual normally gives a whole body. Also classified as Hdx or Adx (human or animal detail x) by Beck.
Dzw	Dbl	DS } (Beck) DdS } S (Klopfer) s { (Hertz) S { W(S), D(S), Dr(S) S(W), S(D), S(Dr) W(s), D(s), Dr(s) s(W), s(D), s(Dr)	White space between blot areas chosen for interpretation Combinations of space details with whole, normal detail, or rare details, the first factor in the combination playing the primary role, the factor in parentheses, a secondary role.
Czw	Succ	Succ (Hertz) Seq (Klopfer, Beck) Z (Beck) D combin } (Vernon) g } g (Hertz)	Interpretation of all the white area of the card (Vernon) Succession or sequence Organization score, where location elements are combined to form a concept—degree of synthetic ability

TABLE VIII (Continued)

German	French	English	Definitions
Erft	Types de Perc.	App.	<p>Erfassungstypus: mode of apperception; manner of approach—the proportions of W, D, (d), Dd (+S) Less than normal amount is indicated by parentheses, e.g., (W), or ((W)) if markedly less; more than normal amount is indicated by underlining, e.g., <u>W</u> or <u>W</u>, or by using exclamation marks, e.g., <u>W!</u> or <u>W!!</u></p>
<i>Determinants (Quality of apperception)</i>			
F	F	F	Form answers—interpretation based on the form of the blot
F+	F+	F+	Good forms (cf. later discussion)
F-	F-	F-	Poor forms (cf. later discussion)
F+%	F+%	F+%	Percentage of well-perceived forms in relation to the total number of forms:
			$\frac{100 F+}{(F+) + (F-)}$
B	K	M	Movement answers—human movement (cf. later discussion)

(B)	(M)	Answers in which there is a feeling of impending human movement, strain or tension (Hertz)—movement tendency
Bkl	Kp	Animal movement (Piotrowski, Klopfer)
Fb	C	Impending animal movement, strain or tension (Hertz)
FbF	CF	Inanimate movement in various combinations with form (Hertz, Piotrowski, Klopfer)
FFb	FC	Detail involving movement (Rorschach, Behn-Eschenburg, Bleuler)
ΣFb	ΣC	Color responses not involving form Color naming Color description Color symbolism Color with form used secondarily Form and color combined
		Sum of the color responses according to the formula: $\frac{1 \text{ FFb} + 2 \text{ FbF} + 3 \text{ Fb}}{2} = \Sigma \text{ Fb}$

TABLE VIII (Continued)

<i>German</i>	<i>French</i>	<i>English</i>	<i>Definitions</i>
Farben-shock	Choc-couleur	Color-shock C-shock (Hertz)	Disturbances in responding to colored cards
		Red-shock	Disturbances in reactions to the red color (Schachtel)
		(VIII-X)%	Percentage of responses to plates VIII, IX, X
$\left. \begin{array}{l} F(Fb) \\ (Fb)F \\ (Fb) \end{array} \right\} \text{(Binder)}$	$\left. \begin{array}{l} F(C) \\ (C)F \\ (C) \end{array} \right\}$	$\left. \begin{array}{l} F(C) \\ (C)F \\ (C) \end{array} \right\}$	Chiaroscuro or shading responses
	F(C) (Loosli-Usteri)		Reactions in which the subject responds to specific parts of the shading (e.g., highlights or cast shadows)—includes vista
$\left. \begin{array}{l} Fhd+ \\ Fhd- \\ hdlF \\ hd \end{array} \right\} \text{(Binder)}$	Clob (Loosli-Usteri)		Reactions to the total impression of shading
		$\left. \begin{array}{l} FY \\ YF \\ Y \end{array} \right\} \text{(Beck)}$	Light-determined responses

V (Beck)	Vista responses—shading used to create perspective and differentiated surfaces
Fc } (Klopfer) cF c	Shading as surface texture
Fk } (Klopfer) kF k	Shading involved in projecting a three-dimensional object on a two-dimensional plane (e.g., X-ray, topographical maps)
K } (Klopfer) KF	Shading used as diffusion
FK (Klopfer)	Vista responses: shading used to create perspective
FC', C'F, C' (Klopfer)	Use of black, gray, or white as color
Ch', Ch'F, FCh' (Hertz)	Use of gray or white as color
Ch'', Ch''F, FCh'' (Hertz)	Use of black as color
Shading shock Ch-shock (Hertz)	Disturbances in reactions to the shading elements in the cards
Choc-clob	
Dunkel-schock	

TABLE VIII (Continued)

<i>German</i>	<i>French</i>	<i>English</i>	<i>Definitions</i>
Erlebnistypus	Types de caractère	Types of Psychic (Affective) Reaction; Experience-type; Experience Balance.	Relation of human movement (B, K, or M) to color answers (ΣFb , ΣC) In addition: (Klopfer) (FM + m) : (Fc + c + C') (VIII-X)%
xB > yFb	xK > yC	xM > yC	Introversive
xB < yFb	xK < yC	xM < yC	Extratensive
xB = yFb	xK = yC	xM = yC	Ambiequal
OB : OFb	OK : OC	OM : OC	Constricted
xB : yFb	xK : yC	xM : yC	Dilated
		B Di	Balanced richness of personality (Meltzer)
		Po	Response determined solely by position of blot-area used
		No (Hertz)	Response determined solely by the number of blot-areas used
<i>Content</i>			
T	A	A	Animal
Td	Ad	Ad	Details of animals
%T	%A	%A	% of stereotypy: $\frac{(A + Ad) \times 100}{R}$

M	H	Human
Md	Hd	Details of humans
%M	%H	$\frac{(H + Hd) \times 100}{R}$
Anat	Anat	Anatomy
(Corresponding Translations)		
	Abst	Abstract
	Alph	Alphabet
	Aobj	Objects created from parts of animals
	Arch	Architecture
	Art	Art
	Blood	Blood
	Bot	Botanical forms
	Cave	Cave
	Color	Color
	Cl	Clouds, mist, fog
	Emblem	Emblem
	Fire	Fire
	Ft	Fountains
	Geog (Geo)	Geographical concepts (not seen in vista, Klopfer)
	Geol	Geological concepts
	Ice	Ice
	Mask	Mask
	Mt	Mountains
	N	Nature
	No	Numbers

TABLE VIII (Continued)

<i>German</i>	<i>French</i>	<i>English</i>	<i>Definitions</i>
		Pl Obj. Sc Sex St Str Sym Vol Wr ()	Plants Objects Scenery Sex Statues, monuments Structures, architecture Symbolic Volcanoes Water forms Imaginary
<i>Originality of Apperception</i>			
Orig +	O O+	O O+	Original responses Original responses where the forms are well seen
Orig -	O-	O-	Original responses where the forms are poorly seen
%Orig	%O	%O	Per cent of original answers
I	I	I	Individual answers
V	Banal	P	Popular responses

I (Guirdham)	Incorporation answers: different-colored sections combined to produce a form answer
E.Q. (Guirdham)	Essential quality: a description of certain intrinsic properties added to a form perception: a. E.Q. ₂ —astereognostic essence: includes perceptions of weight and solidity; b. E.Q. _e —appendage to "animal" or "human," expressing essential emotional circumstances in which animal or human form is reacting.
<i>Organic signs</i> (Piotrowski)	
"R"	Not more than 15 responses
"I"	Average time per response of over one minute
"M"	Not more than one human movement response
"F+g"	% of F+ below 70%
"Fg"	% of P below 25%, if less than 25 responses
"Cn"	At least one color denomination
Rpt	Repetition—repetition or perseveration of the same response to several blots:

TABLE VIII (Continued)

German	French	English	Definitions
		<p>Imp</p> <p>Plx</p> <p>Ap</p>	<p>scored if three or more responses are the same without regard to form</p> <p>Impotence—giving a response in spite of recognition of its inadequacy</p> <p>Perplexity—distrust of one's own ability and a request for reassurance</p> <p>Automatic phrases—the same phrase given for over half the cards</p>
		<p>Signs related to mechanical ability (Piotrowski <i>et al.</i>)</p> <p>"m"</p> <p>Frxx</p> <p>h Evd</p>	<p>Movement of inanimate objects or of natural forces (hanging objects not credited)</p> <p>(Four-six)—plates IV and VI handled as competently as plates I, II, III, V (High evidence)—</p> <p>a. progressive elaboration of original inkblot interpretations in cards I-VII in original protocol (at least two responses containing three or more distinct ideas indicated by a definite noun; a qualitative adjective, except of size or number</p>

if pertaining to symmetry; a verb except "to be" or "to have"; an adverb if it adds a new idea; and b. no incongruous ideas in interpretations of I to VII, except in IV and/or VI

No whole-form interpretations of VIII, IX, and X

No WF

Additional scored categories (without symbols)

Subjective criticism	Criticism by the subject of his ability to perform satisfactorily
Objective criticism	Criticism of the degree to which the response fits the objective nature of the blots—chiefly color (Frankel and Benjamin)
Curve of reactions	Phases within the succession (Schachtel and Hartoch)
Progressive or regressive shifts	Specific changes in the manner of succession (Zubin)
Approaches to the cards (Goldstein and Rothman)	a. Physiognomic: formal and affective features of the card indivisibly fused—loss of the objective character of the blots b. Abstract c. Concrete

hand, has based his norms for *D*, as published in his manuals (39, 50) on statistical frequency. A similar tabulation of normal details based on an adolescent group has been developed by Hertz (277). The main criticism of such statistical tables is on the basis of the groups used for standardization. The weakness of the tables is cogently illustrated in attempts to apply them to different cultural groups (cf. Hallowell, 228-233, and Bleuler, 79), where they have proven quite ineffective. Eventually it will prove necessary to organize tables of normal details found in the various age levels, and in subjects of different educational, social, and cultural groups. It may be assumed from the uniformity existing in the present tables that precise definition of *D* will be possible for very broad groups of subjects (e.g., European-American). The present lists provide a fairly satisfactory framework for current use. The normal details identified by Klopfer, Beck, and Hertz are contrasted in Table IX (pp. 100-105).

A minor issue involved in the scoring of *D* is found in the occurrence of white-space responses as *D* in Beck's list. Klopfer and Hertz distinguish these as *S* responses and score them apart from the normal details. By their frequency they may be considered normal details, but their interpretative significance is more as white-space responses than as normal details.

A further illustration of divergent practices is found in the scoring of the organization involved in combinatory responses. Klopfer does not score this activity by symbols, but evaluates it qualitatively in arriving at interpretations. The *Z* score of Beck (50) compares grossly with the *g* of Vernon (745). The organization score, *Z*, describes in detail the types of combining activity involved in seeing "two or more portions of the figure . . . in relation to one another and when the meaning perceived in the combination, or in any of the component portions, obtains only from the fact of this organization." With Beck both the production of wholes and the organization of details into larger detail units are included in *Z*. There are four kinds of organization activity:

- (a.) wholes; (b.) adjacent details seen in relation to one another; (c.) distant details so seen—distant details being any two or more that are separated, whether by white space or other solid details; (d.) white spaces organized with filled-in elements.

Beck devotes a chapter in his recent manual (50, pp. 58-82) to precise illustrative definition of Z.

A simpler organization score, with an exceedingly high correlation with Beck's Z ($+ .954 \pm .011$, $+ .958 \pm .011$ in two studies) has been proposed by Hertz and labelled g.

Where synthesis of forms takes place, the wholes and details are weighted according to the degree of accuracy (F+), commonality (P) and originality (O) of the forms involved. Where the forms organized are well perceived a g value of 1.0 is assigned; where the forms are well perceived and original, a g value of 1.5; where the forms are inaccurately perceived or popular, g is 0.5 (296, p. 20).

To use such a score for this activity rather than to depend upon subjective evaluation would seem a logical improvement in the scoring method.

Determinants. The scoring problems that have emerged in the location area are slight compared with those in the determinants group. Only the color scores have been universally accepted as originally defined by Rorschach. The scorings of the other three areas of form, movement, and shading determinants have been debated at length and have led to elaborations and "refinements" which have been variously accepted or rejected.

A. Form. The earliest of these determinants to produce difficulties was the scoring of form, especially the distinguishing between "good forms" and "poor forms," or F+ and F-. Rorschach combined a statistical approach with subjective evaluation in arriving at his determination of F+ and F-. He used as the norm and basis the form answers given frequently by 100 normal subjects; these were called F+. He then called F+ those answers received later which were adjudged better than these; F-, those which were inferior. Criticisms have been directed to Rorschach's method on two counts: 1. The standard of frequency of responses given by normal subjects which should be used as an indicator (Rorschach did not publish his definition of "frequently")—how should the compromise between the possible extremes of measuring frequency be achieved? Should the acceptable frequencies be so great as to make the responses "popular" responses, thus leaving large numbers of less popular responses to subjective evaluation, or should the frequencies be

TABLE IX *

COMPARISON OF THE NORMAL DETAILS USED BY KLOPFER (409), BECK (50), AND HERTZ (277, 294)

<i>Blot area</i>	<i>Klopfcr</i>	<i>Beck *</i>	<i>Hertz **</i>
CARD I			
Entire center (woman's body) with or without light gray (transparent skirt) in lower portion	D	D 4	D C
Entire side (witch, bear)	D	D 2	D S
Lower center without lighter gray (thighs and legs)	D	D 3	D 17
Entire lower center (bell)	D	Dd 24	D 15
Upper side (dog's head with snout outside)	D	D 5	D 21
Upper third of center (crab)	D	D 1	D 31
Upper outer projections (wings)	d	Dd 25	D 2
Lower side (lady's head)	d	Dd 28	Dr 10
Upper, inner, clawlike extensions (hands)	d	D 1	Dr 1
Uppermost projections (bear's head)	d	Dd 21	Do 12
Upper innermost details (heads)	d	Dd 22	Dr 9
Bottom projection (feet)	d	Dd 31	Do 3
Small knoblike extension at lower side (sheaf of wheat)	d	D 6	Dr 29
CARD II			
Lower red with or without black-red mixture (butterfly)	D	D 3	D 4
Upper red (Christmas stockings)	D	D 2	D 3
Entire side black (bear, dog)	D	D 1	D 5
Upper portion of black (one half to one third)	D	Dd 21	Dr 22
Upper center (castle)	d	D 4	D 12
Bottom outer projection (hen's head)	d	Dd 22	Dr 7

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Bottom projection adjacent to preceding <i>d</i> (Indian head)	<i>d</i>	<i>Dd</i> 23	<i>Dr</i> 6
Upper side projection (stone head)	<i>d</i>	<i>Dd</i> 31	<i>Dr</i> 8
Inner white space	<i>S</i>	<i>Ds</i> 5	<i>DS</i> 2
Both lateral black figures	<i>D</i>	<i>D</i> 6	<i>D</i> 5
Entire side figure (including upper red)	<i>D</i>	<i>D</i> 1 + 2	<i>D</i> 8
Bottom red plus adjoining black	<i>D</i>	<i>D</i> 1 + 3	<i>D</i> 4 + 5
CARD			
Inner red (butterfly or bow)	<i>D</i>	<i>D</i> 3	<i>D</i> 5
Outer red with or without tail-like extension	<i>D</i>	<i>D</i> 2	<i>D</i> 4
Entire lower center (pelvis or mask)	<i>D</i>	<i>D</i> 7	<i>D</i> 1 + 1
Lower center black (Negro heads)	<i>D</i>	<i>D</i> 4	<i>D</i> 1
Lower side black (fish or hand)	<i>D</i>	<i>D</i> 5	<i>D</i> 2
Upper side black—head and upper part of body of the usual figure (bird on rock, card inverted)	<i>D</i>	<i>D</i> 11	<i>Dr</i> 3 + 6
Middle side black (airplane)	<i>D</i>	<i>Dd</i> 22	<i>D</i> 3
One of the two human figures	<i>D</i>	<i>D</i> 9	<i>DS</i>
Lower center light gray (ribs)	<i>D</i>	<i>D</i> 8	<i>Dr</i> 17
Bottom side portion (high-heeled shoes) with or without lower part of "leg"	<i>d</i>	<i>D</i> 10	<i>Dr</i> 22 (or, <i>Do</i> 22)
Top side black (head)	<i>d</i>	<i>D</i> 6	<i>D</i> 6
Side black lateral protrusion usually upside down as animal head (with tiny white space as eye)	<i>d</i>	<i>Dd</i> 21	<i>Dr</i> 30
Both human figures, with leg details, always seen in relationship with each other; always <i>M</i>	<i>W</i>	<i>D</i> 1	<i>WW</i>
Side black, excluding "leg," plus entire lower middle	<i>D</i>	<i>D</i> 12	<i>D</i> <i>W</i> or <i>S</i> —2

* Numbers following symbols refer to frequency of the response.

** Numbers and letters following symbols refer to locations of the response.

TABLE IX (Continued)

<i>Blot area</i>	<i>Klopfer</i>	<i>Beck</i> *	<i>Hertz</i> **
CARD IV			
Lower center (animal head)	D	D 1	D 2
Lower side black and gray sometimes including the upper side portion (boot)	D	D 6	D 1
Lower side light gray (dog)	D	D 2	D 3+
Entire vertical dark center	D	D 5	D _r 2+
Inner dark side detail (nuns, card inverted)	D	D 7	D 3
Upper side extensions (snake) sometimes with small adjacent portion (dancer with face in adjoining portion)	d	D 4	D 4
Uppermost portion (flower) sometimes including adjacent shaded portion (Japanese face)	d	D 3	D 5+
Outermost lower side extension (head of dog)	d	D 8	D 3
Lowermost portion of lower center detail (crown)	d	D 1	D _r 13
CARD V			
Entire side with or without light gray extensions (face or figure lying down)	D	D 4	D S+ or S-
Center vertical portion (rabbit)	D	D 7	D C
Bottom (tweezers)	d	D 9	D 2
Side extension (leg) sometimes with adjacent thin extension (crocodile's head)	d	D 1	D 1
Top (rabbit's head), or top without uppermost protrusions (policeman's head)	d	D 10	D 1
Contour of lower side detail (profile)	d	D 6	D 1
Contour of upper side detail (boy's face)	Dd	Dd 23	D 30
Top projections (horn)	Dd	D 5	D _r 15
		D 2	D _r or D _o 5

Both top projections as a unit	<i>Dd</i>	<i>D</i> 8	<i>D</i> <i>r</i> or <i>D</i> 5
Projections at bottom middle	<i>Dd</i>	<i>D</i> 3	<i>D</i> or <i>D</i> 2
Side figures (excluding the middle figure) with or without lateral projections	<i>D</i>	<i>D</i> 4	<i>D</i> 13+ or 13-
CARD			
VI			
Entire lower portion (animal skin) or half of lower portion (boat or king's head)	<i>D</i>	<i>D</i> 1	<i>D</i> S + S
Entire upper portion (dragonfly) sometimes including light gray uppermost portion of lower detail (lighthouse on rock with beacon)	<i>D</i>	<i>D</i> 4	<i>D</i> S
Upper black portion only of center column (snake) sometimes without slightly shaded outer portion	<i>D</i>	<i>D</i> 3	<i>D</i> 1
Entire dark vertical center (spine)	<i>D</i>	<i>D</i> 8	
Lighter part only of upper portion (wings)	<i>D</i>	<i>D</i> 2	<i>D</i> 6
Uppermost detail (snake's head) with or without "whiskers"	<i>d</i>	<i>D</i> 5	<i>D</i> C
Lower lateral extensions (dog's head)	<i>d</i>	<i>D</i> 6	<i>D</i> <i>r</i> 18
Two inner light gray ovals (mice)	<i>d</i>	<i>D</i> 7	<i>D</i> 22
Bottom inner projections (birds or eggs in nest)	<i>d</i>	<i>Dd</i> 27	<i>D</i> 5
CARD		<i>Dd</i> 23	S 20
VII		<i>Dd</i> 24 + 28	<i>D</i> 24
Entire bottom portion (butterfly) sometimes each half separate (sheep)	<i>D</i>	<i>D</i> 4	<i>D</i> 3
Middle third (mask)	<i>D</i>	<i>D</i> 3	<i>D</i> 2
Upper third, with or without uppermost projection (women's heads)	<i>D</i>	<i>D</i> 1	<i>D</i> 1
Upper two thirds (dog)	<i>D</i>	<i>D</i> 2	<i>D</i> 1 + 2
Dark center bottom detail (canal)	<i>d</i>	<i>D</i> 6	<i>D</i> <i>r</i> 12
Top projections (squirrel's tail)	<i>d</i>	<i>D</i> 5	<i>D</i> 0 8

* Numbers following symbols refer to frequency of the response.

** Numbers and letters following symbols refer to locations of the response.

TABLE IX (Continued)

<i>Blot area</i>	<i>Klopfer</i>	<i>Beck *</i>	<i>Hertz **</i>
Light gray projections on upper inner corner of top third (icicles)	<i>d</i>	D 8	Dr 20, 14, 15
White space within figure	S	Ds 7	S 18(+ 16 + 17)
Entire side half	D	D 9	Dr S
CARD Side pink (animals)	D	D 1	D 1
VIII Lower pink and orange (butterfly)	D	D 2	D 2 + 5
Top gray portion with or without center line (mountain and tree) sometimes including riblike figure and/or blue portion	D	D 4	D 4
Middle blue portion (flags)	D	D 8	
Riblike figure in upper center (spine)	D	D 5	D 3
Bottom pink alone (bullfrog heads)	D	D 3 or Ds 3	D 20
Bottom orange alone	D	D 6	D 2
Lateral extensions of bottom orange (lamb's head)	D	D 7	D 5
CARD Green portion	<i>d</i>	Dd 26	Dr 9
IX Orange portion	D	D 1	D 2
Small inner portion at junction of green and orange (deer's head)	D	D 3	D 1
Lateral pink (man's head)	D	D 2	D 10
Entire pink portion plus center line (tree), card inverted	D	D 4	D 13
Entire pink or either half	D	D 9	D 3 + C + 3
Center portion between lateral greens (skull)	D	D 6	D 3
Center gray portion (candle), with or without preceding D	D	Dd 22	Dr(S) 30
	D	D 5	Dr 41

Inner pink portion (elephants' heads)	<i>D</i>	<i>D</i> 10	<i>Dr</i> 16
All or most of upper inner orange projections (lobster claws)	<i>d</i>	<i>D</i> 7	<i>D</i> cl
Eye-like portion in middle including green and white slits (eyes)	<i>d</i>	<i>Dd</i> 23	<i>S</i> 20
Archlike light orange at top center	<i>d</i>	<i>Dd</i> 25	<i>Dr</i> 22 + 22
Center space between orange	<i>S</i>	<i>Ds</i> 8	<i>S</i> 4
Both green portions seen as continuous unit	<i>D</i>	<i>D</i> 11	<i>D</i> 2 + 2
Green and orange portion on one side combined	<i>D</i>	<i>D</i> 12	<i>Dr</i> (<i>D</i> + <i>D</i>) 1 + 2
CARD Outer blue (crabs) sometimes with outer green	<i>D</i>	<i>D</i> 1	<i>D</i> 6
X Inner green, dark portions only (caterpillars)	<i>D</i>	<i>D</i> 4	<i>D</i> 3
Entire gray portion at top	<i>D</i>	<i>D</i> 11	<i>D</i> 9 + 9
Gray "animals" at top, without inner gray column	<i>D</i>	<i>D</i> 8	<i>D</i> 9
Entire inner green	<i>D</i>	<i>D</i> 10	<i>D</i> 3 +
Outer gray-brown figures (mice)	<i>D</i>	<i>D</i> 7	<i>D</i> 4
Light portion between inner greens (rabbit's head)	<i>D</i>	<i>D</i> 5	<i>D</i> 12
Inner blue (birds)	<i>D</i>	<i>D</i> 6	<i>D</i> 5
Pink portion separately (mountain)	<i>D</i>	<i>D</i> 9	<i>D</i> 1
Inner yellow (lions or dogs)	<i>D</i>	<i>D</i> 2	<i>D</i> 7
Outer orange (collie dog)	<i>D</i>	<i>Dd</i> 21	<i>D</i> 8
Inner orange (wishbone)	<i>D</i>	<i>D</i> 3	<i>Dr</i> 14
Outer upper green (grasshopper)	<i>D</i>	<i>Dd</i> 22	<i>Dr</i> 2
Gray column at top without gray "animals" beside it	<i>D</i>	<i>Dd</i> 24	<i>Dr</i> 30
Outer yellow	<i>D</i>	<i>Dd</i> 23	<i>Dr</i> 10
Pink with entire top gray (flowers), card inverted	<i>D</i>	<i>W</i>	<i>D</i> 1
Pink with inner blue (man on a mountain or cliff)	<i>D</i>	<i>D</i> 6	<i>D</i> (<i>D</i>) 1 + 5 + 1

* Numbers following symbols refer to frequency of the response.

** Numbers and letters following symbols refer to locations of the response.

so small as to result in the risk of inclusion of such personalized responses that measurement by frequency loses its real significance? 2. By what criteria should a response be adjudged better or worse than the list achieved statistically? A satisfactory answer to these questions has not yet been reached. Gardner (194) circumvented the difficulty by restricting his scoring of $F+$ to only those responses occurring frequently on a statistical basis.

Beck attempted to meet the difficulty by what Hertz has criticized as a circular method. Reasoning from the evidence that $F+$ is indicative of intellectual control, he assumed that the quality of frequent form responses in individuals of superior and average ability, as compared with those of the feeble-minded or mentally ill, would differentiate $F+$ from $F-$. On this basis he set up a list of $F+$ and $F-$ responses, maintaining a standard scoring once a response was established as belonging in either group. An extensive portion of his current list of $F+$ and $F-$ responses is reproduced in his latest manual (50). Responses occurring infrequently he evaluated by applying this rule:

If the new association follows the form of the known $F+$, it is scored $F+$. If it follows the form of the known $F-$, it is so scored.

The criticism of Beck's tables, as made by Bleuler (78), Klopfer (391), and indirectly by Hertz (281), has been that such a list results in evaluation on the basis of the content of a response, whereas the quality of form perception may vary between extremes of poor and good, even though the content is the same. This variation in form perception depends upon how the individual has reacted in the instance of the single response and in the sequence of the total record. A second criticism, pointed up by Booth (84) and Hertz (278), is that in measuring the quality of form. Beck has used a principle which not only reflects the variable of intellectual control but also of intelligence itself, so that interpretation of $F+$ or $F-$ as a control factor cannot be separated, as it is in Beck's practice, from the measurement of the I.Q. In other words, as Hertz states (278), " $F+$ is a form which is well-perceived and $F-$ a form which is poorly perceived by any group—superior, average, or inferior mentally, emotionally stable or unstable, aggressive or submissive, etc."

A list of $F+$ on the basis of frequency and on the basis of subjective evaluation, in the case of infrequent responses, has been prepared by Hertz. She has maintained a check over the latter judgments by securing ratings from five judges to reduce the "halo" present when an individual examiner "empathizes too readily" (592, p. 186) with a subject's response.

Klopfer has attempted to solve this problem in three successive ways:

1. To set up norms based on frequency and qualitative determination of the form according to definite criteria:

Keenness of form may be based on:

- a. Choice of a form interpretation of a W or D fitting altogether more closely than the usual answers;
- b. Elaboration and integration of more details than usual within a popular interpretation;
- c. The selection of unusual details or an unusual combination of details because of the specific form pattern thus gained;

Negative qualities in form interpretation are:

- a. The confabulatory approach;
- b. Form interpretations based on blind guessing, vaguely in the direction of the given form;
- c. The contaminatory approach;
- d. Complete perseveration;
- e. Position responses;

2. Later, to substitute an $F\%$ scoring for $F+$, thus in effect skirting the problems involved in scoring $F+$ or $F-$, although maintaining evaluation of the quality of the form in the interpretation of the record. He scored as $F+$ only a few responses distinguished by unusual keenness of form perception, as $F-$ only the grossly abnormal responses, and the remainder as F ;

3. More recently (407), to rate the form quality on a scale from +5 to -2:

- a. Zero rating—responses where the form element is indefinite or disregarded (e.g. primary shading, color or abstract movement responses) except in instances where a very definite form configuration is grossly disregarded (assigned a minus rating);

b. Minus ratings—

- i. *-1 rating*, ineffectual effort to reconcile form of blot and form in concept;
- ii. *-1.5 rating*, classical confabulatory response;
- iii. *-2 rating*, irrational responses where there is no attempt to reconcile forms in the blot and the concept;

c. Plus ratings—*basal* ratings:

- i. *+1 rating*, most frequent responses and those not more or less accurate although less frequent than the most frequent ones;
- ii. *+1.5 rating*, responses which are fairly usual but not as frequent as the most popular ones given to a more carefully selected blot area or with a somewhat original twist to them;
- iii. *+2 rating*, the most unusual but obviously keen responses (so-called good original responses);

d. Form level credits—each independent step in specifying and organizing the concept adds or subtracts half a point of credit:

- i. adding credits: one half a credit for each independent, spontaneous specification relevant to the concept and exceeding the essential elements of the concept and contributing to the form accuracy, including specific movement elaborations;
- ii. subtracting credits: in a response assigned a *basal* rating, for each specification which lowers the form level.

Both the validity and reliability of this method of form level rating are still open to question. A modification of this method of form rating has already been proposed by Goldfarb (194). He adds one-half a credit for the presence of organization activity in a response. Only one additional half credit for organization is allowed for each response.

To summarize this discussion, a form response is one in which the outline of an area or areas of the blot has been perceived and utilized in constructing a response. The quality of these form responses may be “good” (*F+*), where the form of the blot has been well integrated with the concept, or it may be “poor” (*F-*), where the form has been only suggestive and where the concept has departed grossly from the actual form of the blot or where the blot form has been arbitrarily forced into the concept. Involved in the evaluation of the form quality are two factors. 1. Determination of whether or not the portion or the whole of the blot as used approximates closely the common perception

of the actual form to which it is related in a response (blot-quality). It would seem justifiable to score a response frequently given to the blots as a good form response under most conditions. The exceptional cases would be found when the individual in responding has not used the form of the blot. Some of the conditions under which this failure to utilize the form might apply are: (a) where a subject has perseverated in giving again a previous response without regard to the blot form; (b) where he has confabulated a response by extending the interpretation of a part of the blot either to a larger detail or to the whole; (c) where he has reacted to color, shading, and some forms of movement rather than to form; (d) where he has responded to the position of the blot area without regard to its form. 2. The second step involved in the evaluation of the form quality is determination of how the individual has actually used the form in shaping his response (response-quality). This may be discovered in many responses by careful inquiry (Rapaport, 592, emphasizes also speedy inquiry), or by drawing the response as in the Graphic Rorschach. In the case of some responses, however, only inference on the part of the examiner can achieve real clues as to how the subject has used the form. Such judgments must be based not only on the particular response but also on the quality of other responses in the total record. A subject who has used the form adequately in most other responses is likely to have used it well in a single response, although such a principle does not always hold.

Tables of $F+$ and $F-$ responses should show, then:

1. Common responses in a large sample representing a normal distribution of the population, determined on a statistical basis satisfactory to several outstanding Rorschach workers. Such responses should be used as indicating $F+$ unless inquiry reveals: (a) failure to use the form of the blot, as in perseverated, position, confabulated, etc., responses; (b) failure to integrate the form into the concept;

2. Good form responses too infrequent to appear in 1. arrived at by independent judgment of a number of judges (Hertz's use of five judges might form an adequate standard for number);

3. Responses which are exceptions to the use of good form having the same content as the common responses in 1. or the responses adjudged to be good form responses in 2. Some exceptions will appear with greater frequency than others and will vary in significance from minor to gross exceptions. Such a table would be of value in estimating F -scores and in pointing up the locations in the blots which are most inclined to produce exceptions to good form responses;

4. Responses which are adjudged on the same basis as 2. to be poor form responses.

B. *Movement*. The movement responses (M) were described by Rorschach as "the thorniest problem in the entire experiment" (617, p. 26). As conceived by Rorschach, answers included M "practically only when human beings or animals capable of motion similar to that of human beings (monkeys, bears) are seen in the figures" (p. 25). Muller (507) agrees with Rorschach that the movement must be felt by the subject. The difficulties in scoring M mentioned by Rorschach included distinguishing between a form which is actually seen in motion and a form to which an association of movement is secondarily offered. He called the first type of reaction "primary movement," and the second, "secondary movement." A second difficulty is in the interpretation of the gestures and other involuntary movements of the subject during the responses, which, according to Rorschach, frequently "will indicate whether or not kinaesthetic influences are in play." It was his experience that the general motility of the individual during the test was not an expression of the kinaesthetic influences playing upon him while interpreting the figures. "On the contrary, the individual who is influenced by kinaesthetic factors in the test is stable in his general motility." A third difficulty is to be found in determining whether a response is one of form (F) or movement (M). Rorschach suggests that an inquiry and comparison of the response with answers that are clearly F or M will make the differentiation possible. The fourth difficulty is in the examiner's avoiding a bias in the interpretation of movement. "The personal equation of the examiner can warp the results most easily here." The observer

who would be inclined to give *M* answers himself would more easily interpret the answers of others as containing this movement factor.

Apart from Rorschach's work, the earliest definition of the *M* responses was by Furrer (190) and Oberholzer (526-527). They both adhered closely to Rorschach's method of scoring *M*. Furrer, who attempted a psychoanalytic interpretation of the meaning of *M*, suggested that it meant an experience usually unconscious, of a wish-fulfilling nature. Oberholzer strongly emphasized that in the interpretation of *M* it is not the content of the *M* responses which is of basic importance but rather the quality of the movement evidenced by them. He continued Rorschach's dichotomy in the description of movements as "flexion" or "extensor" movements, and indicated that *M* represents the compulsion determining what is lived and how it is lived. In other words, the movement represents the creative energy at the disposal of the individual for fulfilling his basic wishes and, symbolically, the nature of these primary wishes.

Some experimenters (e.g., Beck) have continued to apply Rorschach's rule concerning the scoring of movement (*M* = human or humanlike action), and have scored only the human movement of the various types represented in the responses. Thornton (26), however, finding a close correlation between animal and human movements, scored both in his *M* group; he claimed as a result a higher reliability for *M*. Klopfer (413) and Piotrowski (552) introduced further precision in the scoring of movement by singling out three types of movement: human movement (*M*), animal movement (*FM*) and movement in inanimate objects, or expression and tension without real movement in human or animal figures (*m*). Their rationale for further subdividing the movement scores was based on the practice of Rorschach in scoring animal and inanimate movement as form responses tending-toward-movement (*F* plus *M*). Piotrowski gives illustrations of these three categories (552). Hertz (296) further subdivided movement scoring into five categories: *M*, human or humanlike movement; (*M*) impending human movement, strain or tension; *M*, animal movement; (*M*), impending animal movement, strain or tension; and *m* (alone and in various

combinations with *F*) as inanimate movement. Beck has criticized these "refinements" as departing from the Rorschach-Oberholzer-Levy tradition by introducing into the movement score factors which were not intended by Rorschach to be *M*. This argument appears rather shallow, because the scoring and interpretation of *M* has departed little from Rorschach's approach. The refinements have been in the direction of scoring and attempting to validate the secondary movements not intended to be included by Rorschach under *M*.

C. Shading. Another determinant that has provided many problems even more difficult than movement is shading or chiaroscuro. Rorschach did not introduce a category for these responses in his original monograph, but made use of the symbol (*C*) for shading in his posthumous paper published with Oberholzer (618). The credit for the first elaboration upon the scoring of shading belongs to Binder (63, 64). Binder distinguished two main types of shading responses, those characterized by a diffuse whole impression of the shading, the *hd* responses, which may or may not be combined with form elements, and those characterized by the use of the lightness and darkness as specific qualities of the form perceived (e.g., to provide highlights on a rounded form), the *F(Fb)* or *F(C)* responses. Bleuler (78), Booth (84), Ganz and Loosli-Usteri (193), Monnier (502), Vernon (746), and Guirdham (223) all lent support to the Binder method of scoring shading. H. Hertz and Sicha (270) summarized Binder's method of scoring and his illustrations of shading responses. Klopfer and his associates preferred an elaboration of Binder's scoring. Beck, at first, criticized Binder's methods of scoring, but later he revised his early estimate favorably (50). Beck restricted himself to scoring two forms of shading responses, *V*, vista responses (usually combined with form as *FV*) and *Y*, flat light-determined responses in which the "light values as such recall the thing seen" (50, p. 126).

Klopfer achieved greater specificity in the scoring of shading, and has gained the support of Hertz for most of his categories, which are briefly defined as:

k, kF, Fk —shading as three-dimensional expanses projected onto a two-dimensional plane such as X-rays or topographical

- maps; characterized by a flattening out of the shading which in responses by others may be used to provide depth or texture;
- K, KF* —shading as diffusion, as found in the responses “clouds” or “smoke” where the shading does not provide the impressions of solidity or distance but of “space-filling”;
- FK* —vista responses, more specific in definition than Beck’s *V*, most characteristically evidenced by shading giving the effect of separate objects being spread out in space;
- Fc* —shading providing the impression of surface texture in a form (occasionally included by Beck in his *V* responses);
- c, cF* —texture qualities provided by the shading without form or with form as secondary to the determining of the response;
- FC’, C’F, C’*—black, white or gray used as color in various combinations with form or alone.

Hertz (284) has presented illustrations in the scoring of shading responses, contrasting the methods of Binder, Hertz, Rickers-Ovsiankina, Beck, and Klopfer and Piotrowski. The black and very dark shading responses are illustrated and interpreted by Mohr (500).

In the earlier years when Klopfer’s symbols were first proposed they were criticized because of their lack of validity and their complexity. The former interpretative difficulty is gradually being reduced by the building up of evidence as to the significance of these scores.

Popularity-Originality. Of the other scoring areas, content and popularity-originality, only the latter has introduced problems into the scoring. Although various investigators have used different symbols for content, the evaluation in this area provides few questions. As to popularity-originality, a concept presented by Rorschach in his posthumous publication (618), popular or vulgar responses were defined as those interpretations which occur once in every 3 records. The original were defined as those which occur once in every 100 records. Guirdham (219) called a response occurring once in every 6 records a popular response. Hertz (280) applied this same criterion and gave norms for the *P*% in several groups. She reported that five scorers (Beck, Loosli-Usteri, Vernon, Gardner, and Hertz) agreed on the following as *P* responses:

- Card I—bat
- Card III—persons, men, clowns
- Card IV—animal skin, fur or pelt
- Card V—bat, butterfly
- Card VI—animal skin, fur or pelt
- Card VIII—animal

Four agreed on:

- Card I—butterfly
- Card III—butterfly (centre red)
- Card X—spider
 - rabbit's face
 - worms, caterpillars

Klopfer would accept all these responses as popular with the exception of the "animal skin, hide, or fur" in Card IV, and would add, in Card II, animal or part of an animal in the side figures.

Beck distinguished 20 *P* responses on the basis that the percentage of frequency of a given response to a *W* or *D* (the only locations in which *P* responses may occur) is approximately three times or more greater than the next most frequent response. His list of *P* is:

- Card I—bat, butterfly or moth to whole
 - human form (lower centre *D*)
- Card II—two humans (**W**)
 - butterfly or moth (lower centre *D*)
 - animal, dog or bear (side black)
- Card III—two humans, including "leg" area
 - butterfly or moth (centre red)
- Card IV—animal skin
 - foot or shoe, or plural of each (lower side *D*)
- Card V—bat or butterfly, moth
 - leg (side *D*)
- Card VI—animal hide, pelt, skin (*W* or *D*)
- Card VII—human heads or faces
 - clouds (*W* or half of *W*)
- Card VIII—animals (bears, dogs and wolves—not other animals)
 - skeletal form, basic part of which is ribs (*D* in centre)
- Card IX—head or face (lower red *D*)
 - human figure (orange)
- Card X—crab, octopus, or spider (side blue)
 - rabbit's head

Original responses are too numerous to quote. While there is universal agreement as to the method of determining the original responses, some students of the Rorschach (e.g., Beck) no longer score this category. Klopfer distinguishes between main responses which are original, and original additions to more frequently perceived responses. The latter scored with an additional $+O$ score.

Shock. Three further elements of the scoring require definition: color, shading, and kinesthetic shocks. The first refers to evidences of disturbance in reaction to the colors of the cards. This is interpreted as meaning shock in the presence of the bright colors in the cards. A specific type of color shock, a reaction to the bright red especially of cards II and III, has been called "red-shock" by Schachtel (658). Oberholzer (150) has introduced the concept of "black color shock" to indicate disorganizing reactions to the blackness of some of the cards (e.g., card V). Shading shock is indicated by emotional reactions to the shading (*chiaroscuro*) in the cards, usually in the achromatic cards, but occasionally in the colored cards (especially Card IX). Kinesthetic shock is a term proposed by Loosli-Usteri (461, 463) and refers to disturbances in cards which normally bring forth movement responses.

The most complete list of evidences of shock has been compiled by Brosin and Fromm (102). The evidences of shock which they noted, as well as other signs of such disturbances mentioned elsewhere, included:

1. uneasiness (physiological);
2. exclamations involving emotion;
3. emotional comments showing stress or defensiveness;
4. refusal of cards;
5. absence of interpretations of specific types (color, shading, etc.);
6. mention of elements creating shock without using them in responses;
7. decline in number of responses on a card or the cards of a group;
8. hesitation (prolonged reaction time); occasionally a very short time may indicate shock also; prolonged reaction-time may perseverate into other cards or may not be expressed in the card producing the shock but may be postponed until a later card;
9. decline in the quality of the responses, especially of the $F+\%$,

- whole and normal detail answers, movement and shading responses;
10. impoverished content;
 11. decrease in the number of popular responses;
 12. modifications in the sequence or succession, e.g. from "orderly" to "loose";
 13. in the case of color, choosing paler rather than brighter colors, limiting color responses to cards II and III, and giving fewer than one-third of the total responses in the last three cards.

Many publications providing scoring samples and norms are now available (Beck, 39, 50, 53; Behn-Eschenburg, 54; Bochner and Halpern, 80; Davidson and Klopfer, 133, 134; Dubitscher, 146-148; Dunmire, 152; Ford, 172; Ganz and Loosli-Usteri, 193; Gardner, 194; Guggenheim, 217; Guirdham, 219; Harriman, 239; Hertz, 274, 283, 285, 289, 290, 299, 304; Hunter, 322; Kerr, 380; Klopfer, 396; Klopfer *et al.*, 405; Loosli-Usteri, 458, 463; Löpfe, 464; Maslow, 481, 482; Maza, 487, 488; Oeser, 530; Rickers-Ovsiankina, 601; Salas, 643; Schneider, 673; Sicha and Sicha, 686; Sunne, 714; Vernon, 744-746).

The foregoing presentation of the scoring symbols and the problems in scoring may misrepresent the extent of standardization in scoring that exists at present. The reader is asked to keep in mind that underneath the diversity of symbols is a large degree of uniformity in scoring practices. The symbols are only convenient designations for processes. That one experimenter calls a process by one name, and another chooses a different name, does not reflect on the equality of the processes described. There would be some merit in adopting the suggestion of Loosli-Usteri (462) that Rorschach symbols be universalized by basing them on Latin, although this suggestion has not been taken up. It must also be remembered that the scoring is not an end in itself. It is simply a step along the way in arriving at a personality description. One scoring system that arrives at a valid and reliable personality description may be considered as adequate as another that attains the same end. It is generally true that the skilled Rorschach examiner will be more interested in the responses and their meaning than in a specific scheme by which they may be tabulated. With the learner of the technique, scoring schemes are of real value, however, in indicating the range of factors to be

considered in interpretation of a record. The chief purpose of the preceding discussion on scoring is also to develop such insight. Even at the risk of confusing by the multiplicity of symbols and the divergencies in scoring, the methods of various experimenters have been presented to point up the importance of approaching the scoring of a record with this question: "What process has taken place in the subject which has led to this response?" Gaining an understanding of the possible responses to the Rorschach cards as shown in the various scoring symbols is the surest way to prepare for the complex task of interpretation.

A further use of the preceding discussion of scoring is in the reading of the Rorschach literature. The Rorschach worker who masters one scoring method should not find great difficulty in understanding other scoring methods, although each new method demands some reorientation. It is hoped that this present comparison of scoring practices will facilitate shifting from one approach to another, thus extending the range of Rorschach literature which may be useful for the student trained to score in one specific way.

INTERPRETATION OF THE RORSCHACH TECHNIQUE

Just as Rorschach developed the main aspects of the scoring system, so also he proposed the greater part of the interpretative technique in his test. The premise upon which his interpretations were built is that the responses fall "in the field of perception and apperception rather than imagination." In other words, the deductions about the personality are to be made upon *how* the subject reacted to the blots rather than with *what* he responded. While the latter, content, was not completely overlooked, it formed only a minor part of the evidence provided by the patient. It was further assumed that the total responses of the individual to the test situation were of fundamental importance and that individual responses became meaningful within this framework of the whole. In this regard, Schachtel (660) has examined the influence upon responses of various subjective definitions of the test situation, finding that if the subject regards the test as an imposition upon him by an authority, or as a challenge to com-

pete with others who have taken the test, or as a situation in which self-defense is necessary, he will respond according to various different patterns. These patterns gain significance by being understood in the context of the attitudes of the subject. The implication of this point of view, and the assumption of Rorschach, is that an arbitrary significance may not be assigned to an aspect of the record such as color, form, or movement without taking into account the subject's total record. This accounts for the complexity of the interpretation of a record. No rule-of-thumb procedures may be outlined. No list of meanings of different scores can be objectively applied. The interpretation of a Rorschach record is an artistic achievement depending upon the ability of the examiner to interrelate a multiple number of variables, a process aided but not accomplished by scoring.

The first step in interpretation of a record is, however, the setting up of a number of hypotheses based upon the scores assigned to the record. Certain meanings have been found to be normally characteristic of certain scores. As a preliminary stage in the development of the personality picture these characteristics are listed. The meaning of the scores in the particular case must then be checked by evaluating the effect of the total test responses upon each individual response. Scores that have a general meaning under most conditions may take on a personal significance in the frame of reference of the test as a whole. This personal significance may be close to, or distant from the usual meaning of the scores.

Number of Responses and Time Scores. The first scores to be evaluated are those dealing with the number and time of responses. Rorschach found that the normal individual usually gives between 15 and 30 responses; Klopfer (409) revised these figures upwards to 20-40 responses; Rapaport (592) reported the normal average to be around 24. All workers are in agreement that a wide range in *R* may be found in normal individuals, but that less than 10 or more than 75 responses demands further examination. The normal subject seldom gives less than 9 responses. To do so requires rejection of more than one card; scarcely found among normals. The following are the main indications of rejections of the various plates:

- Card I—difficulty in adjustment to the test situation; possibly shading shock;
- Card II—initial color shock;
- Card III—movement disturbance; color shock;
- Card IV—shading shock;
- Card V—blackness shock;
- Card VI—sexual shock or texture shock;
- Card VII—shading shock; white space shock;
- Card VIII—color shock; animal movement shock;
- Card IX—shock caused by color, color-blending, texture, or indistinctness of details (the only card likely to be rejected by normals);
- Card X—shock caused by color or disparateness of detail forms.

The importance of rejections depends upon the ability or inability of the subject to recover in later parts of the test, in the inquiry, or in the testing-the-limits phases of the administration. Rejections not compensated for by later signs of adjustment assume more critical importance. The amount of recovery is a clue to the extensiveness of the emotional disturbance indicated by the rejection.

Those who provide over 50 responses are frequently subjects of higher intellectual or artistic ability. Klopfer (409, p. 258) reports that "more than seventy-five main responses are hardly to be expected except among really brilliant, productive subjects." Some neurotics, however, and some preschizophrenics will produce extensive records, often with marked perseveration in content with a corresponding reduction in the quality of the record as a whole. It is apparent, then, that the evaluation of *R* depends upon both the number and the quality of the responses.

The average time per response may show wide variations from subject to subject. The average range is considered to be between one-half and one minute. The average college student has a response time of about one-half of a minute. Rorschach (617) reported that schizophrenics were more rapid in their responses than normals, while Klopfer (409) found the shortest response times among his records to be those of 11- and 12-year-old children who were sophisticated in the taking of tests. There is rather general agreement that a response time of over one minute indi-

cates pathological conditions of organic (e.g., epileptic) or functional (e.g., depressive) nature. Response time has not been shown to be of diagnostic value apart from other aspects of the records.

The times up to the first responses in each card are of help in confirming the presence of shock. The meanings of delayed reaction times are similar to those of rejection although of less severity. Comparison of the average reaction times to the colored and non-colored cards may show the presence of color or shading shock, especially if the average reaction time in one instance is more than twice that in the other.

Location. The location scores are interpreted as being indicative of the individual's general manner of approaching life situations. They are interpretable independently and in terms of their interrelationship, a category known as the *manner of approach*. Rorschach reported that normal individuals would have a distribution of 7 *W*, 20 *D*, and 3 *Dd* (corrected to a basis of 30 responses for comparison). Beck revised this distribution tentatively on the basis of his experience to 6 *W*, 20 *D*, and 4 *Dd*. Klopfer expressed the normal approach in percentages (20-30% *W*, 45-55% *D*, 5-15% *d*, <10% *Dd* + *S*). Scores within these normal ranges indicate that the individual has not overemphasized any of the location areas at the expense of others.

Some individuals will produce more or less than the normally expected amounts of *W*, *D* or *Dd*. A record that predominates in *W* responses may be given by individuals with excellent intellectual capacities for organization and abstraction. Among these would be found those whom Rorschach called the "pure *W* type." Their records consist of 10 whole answers of brilliant quality corresponding to their own superior intelligence and drive to distinguish themselves in their performances. Not all records overemphasizing *W* indicate superior capacities for abstraction. It is necessary to determine the originality and form accuracy of the wholes. Organizing capacity is not involved in the production of simple, popular wholes. An excess of these may point to a superficiality—a tendency to avoid deep personal involvement in experiences—or an ambition to achieve beyond capabilities. If the form accuracy level is poor we may suspect a serious

deficiency in functioning, commonly produced in cases with organic pathology, in schizophrenics, or in the feeble-minded. The absence of wholes does not imply an incontestable lack of ability to accomplish generalizations. Some subjects with such capacities will sacrifice whole responses for those of another type more expressive of their own tackling of life situations.

Individuals who have a predominance of normal detail responses have been found to be preoccupied with the practical, common problems of everyday life—to think through the issues of life in terms of obvious and, at times, platitudinous ideas. A deficiency in the use of normal details may point to an inability to employ such common sense or to attend to the necessary practical routine of living.

The presence of an excess of *Dd*, tiny or unusual details, frequently accompanies anxiety. Small details may be the result of quantity ambition, of excessive preoccupation with the minute, of fussiness and obsessive-compulsive tendencies, of overcritical characteristics, or of inferiority feelings. The quality of the *Dd* responses will affect their significance. A predominance of edge details, for example, may reveal an escape mechanism, an attempt to get away from the disturbing inner aspects of the blot and, by analogy, from the inner aspects of the self; a preoccupation with details on the inside of the blot may indicate absorption in the inner life.

To Rorschach goes the credit for the discovery that use of the white spaces represents oppositional tendencies. These may be expressed in overt behavior if they occur in an extraversive patterning in the test as a whole, or may be directed inwardly against the self if they are found in an introversive patterning. These interpretations have gained support from the finding of Boss (90) that there is a definite correlation between deviations from social standards and the incidence of *S* answers.

The oligophrenic or *Do* responses, where an individual sees only part of a figure where normally a larger whole is seen, such as responding "foot" where "a whole person" is customary, was so named because of its frequency in the records of the feeble-minded. Guirdham (209) noted this tendency also in the depressed. The *Do* response was described by Loosli-Usteri (463)

as representing an inhibition of thought ("detail inhibitoire") and was found in others than the feeble-minded.

The final interpretative aspect of location scores is their succession. A *rigid* succession is found when an individual always approaches each card in the same fashion, usually beginning with *W*, proceeding to *D'*, thence to *Dd* and *S*. Occasionally the inverse of this order is found. The rigid approach shows an inflexibility in adjustment which impairs the mental functioning. An *orderly* succession is present when the majority of the location scores succeed one another in a uniform fashion but where some discrepancies in the succession are occasionally used. This is the optimum condition for effective employment of one's capacities. Within psychotic and some brilliant though unstable individuals the succession is often *confused*, i.e., presenting no observable order.

Determinants. 1. Form. Responses in which the subject uses form exclusively, or form as the major determinant combined with another determinant used secondarily, reflect the intellectual control exerted by the individual over other aspects of his personality. Form scores, then, combined with the information secured from the location scores, give us a picture of intellectual activity. In those records where over half the responses are *F* without other determinants we may expect that the social adjustment and emotional life of the person are restricted beyond the normal by his thought processes. The *F%* gives us a clue to the stereotypy of the thinking. Prejudice, inflexibility, fixed ideas are likely to be found accompanying a high *F%*.

F% is to be distinguished from *F+%* which indicates the quality of the form answers whether the form stands alone or is used with other categories such as shading or color. The traditional meaning assigned to *F+%* is that it shows the intellectual capacity of the individual. It would be expected that a high intelligence would be a condition for a high *F+%*; a low intelligence, a reduced *F+%*. The *F+%*, however, is sensitive to more than capacity. It reveals phases of the emotional adjustment of the individual. Rorschach noted that depression and pedantry tend to increase the *F+%*, whereas elation, epilepsy, and brain disease decrease the form accuracy. The height of the *F+%* is a

sign of the depth of depression. $F+$, in essence, describes the quality of the apperceptive processes and indicates the capacity not only to observe but to call forth associated memories stimulated by the form of the blot. It may reveal the individual's interpretation of his world and the mental resources for associating to his perceptions. Beck would suggest substituting the psychoanalytic term "ego" for $F+$ in interpretation of its meaning.

2. *Color*. The color scores in the test reveal the subject's emotional relationships to his environment. To gain an accurate picture of the emotional life we must understand the interrelationship between form and color. Where color is used apart from form we expect to find impulsive emotionality. The more important form becomes in the concepts using color the more the emotion is brought under control. CF responses imply emotional excitability and sometimes suggestibility, an infantile but not uncontrollable emotional life. FC connotes emotion at the service of social adaptability. An optimum relationship is present when FC stands to $(CF + C)$ as 2:1. This condition is found when the capacity for establishing rapport (FC) predominates over egocentricity (CF) and impulsiveness (C).

The occurrence of color shock has been noted as a characteristic of neurotic individuals. Brosin and Fromm (103), following Goldstein (208), have called the appearance of color shock a "catastrophic reaction." An individual's performance is impaired by loss of psychic equilibrium caused by the color effects. Such a reaction does not occur in normal individuals but is typical of the neurotic, and of more seriously disturbed individuals.

3. *Movement*. The M scores were explained by Rorschach as reflections of the associative life of the subject. The higher the productivity of M 's, the greater the richness of associative life. Movement responses, then, are indicative of the deep forces in the personality which produce imaginative life. The significance of M was interpreted by Beck (40) to vary with different personality structures. In healthy adults and some neurotics, especially those of superior intelligence, it has the significance of inner creative activity; in schizophrenia, a more personal creative experience; in adults with conduct disorder, but without psychosis, the character of fantasy living; in the feeble-minded,

a rudimentary fantasy experience; in the depressed, the residue of such capacity escaping intra-psychic constriction; and in the manic, egocentric wish-fulfillment. In those schizophrenic patients with a coordinated delusional system, Guirdham (219) found a higher incidence of *M* than in more dissociated schizophrenics. Goldfarb (204) expressed the opinion that *M* responses represent "the constructive urge to face frankly and directly one's feeling through the medium of fantasy and conscious introspection." This stands in contrast to the animal movement (*FM*), which means "imaginative excitation in response to emotional stimulation (with) less direct, less conscious, and consequently less mature awareness of the nature and direction of the aroused feelings."

Klopfer (409) has distinguished the *M*, human movement, which he describes as the "indicator of the richness of the inner life, the creative powers, and the acceptance of one's inner promptings," from the animal movement (*FM*), which reveals the activity of the most instinctive layers of the personality. If an adult subject has a greater proportion of *FM* than *M*, Klopfer would conclude that the subject is "living on a level of instinctive prompting" rather than of controlled creative activity. The further distinction in movement scores introduced by Klopfer, (*m*), seems to reflect tensions within the personality structure which lead to defenses against the forces within the personality, frequently of the nature of projection. A relationship between responses using *M* and those using (*FM* + *m*) is optimum if appearing in the relationship of two to one.

In their work with children Hertz and Kennedy (307) described the relationship between *M* and intelligence. They concluded from statistical examination of their records that when *M*'s occur with good forms, organization, good originality, and in response to details, superior ability is definitely indicated. Especially from the combinations of *M* with organization in detail responses and of *M* with good original answers very superior abilities may be inferred. A repetition of this experiment with adult subjects should prove of real importance, although clinical experience would support the validity of its findings for adults.

Various workers have compared the number of *M* answers

with the number of W responses. Where $W:M > 2:1$ it indicates a lowered sense of personal adequacy; where $W < M$ the situation is reversed and the self-respect exceeds the confidence in the outer world, a narcissistic adjustment. Klopfer is of the opinion that the $W:M$ relationship gives clues to the creative productivity of the individual. When W exceeds twice the number of M he has found that the individual's ambition outstrips his creative powers, and that where the reverse is found the individual is engrossed in his own inner life to the detriment of his efficiency. The result in both these conditions is a reduction in adequate self-expression.

4. *Experience Balance*. While the color and movement responses are of interpretative meaning independently, they are also of significance in comparison with one another. Rorschach called the relationship between M and the sum of the C scores the "Erlebnistyp," translated as "Experience Balance." This relationship he interpreted in terms of his typology as reflecting the introversiveness ($M > \Sigma C$) or extratensiveness ($M < \Sigma C$) of the personality. Rorschach followed Jung in attributing introversion and extraversion to the personality, but developed a more dynamic concept of these two types. Bryn (108) has outlined the characteristics which Rorschach associated with each type (Table X).

Hertz (299, IV) has refined the scoring of the Erlebnistypus, distinguishing the following types: ¹

1. EXTRATENSIVE TYPE

- A. Pure and very extratensive, where ΣC is greater than M by 3.0 or more and no movement is given ($0M << y\Sigma C$)
- B. Very extratensive, where ΣC is greater than M by 3 or more and M is greater than 0 ($xM << y\Sigma C$)
- C. Extratensive, where ΣC is greater than M by less than 3 but the formula is not constrictive ($xM < y\Sigma C$)
- D. Pure extratensive, where ΣC is greater than M by less than three, (i.e., by 1.5 to 2.5) and no movement is given ($0M < y\Sigma C$)

¹ M. R. Hertz, Personality patterns in adolescence as portrayed by the Rorschach ink-blot method: IV. The "Erlebnistypus," a typological study, *J. gen. Psychol.*, 29 (1943), 4-5. By permission.

TABLE X *

RORSCHACH TYPES

(After Bryn, 108)

<i>Extrastensive</i>	<i>Introversive</i>
Intelligence of a more stereotyped kind	Intelligence of a more differentiated kind
More reproductive in mental life	More original and productive in mental life
Mind turned outward	Mind turned more inward
Unstable emotional life	More stabilized emotional life
Better adjustment to reality	Less well adjusted to reality
More extensive than intensive intercourse with others	More intensive than extensive relations with others
Excitable, unstable motility	Measured, more stabilized motility
Adroitness, manual dexterity	Awkwardness, clumsiness

2. AMBIEQUAL TYPE

- A. Very ambiequal, where M and ΣC are approximately equal and have values of 3.0 or more ($xM = x\Sigma C$; or, $xM : (x + .5)\Sigma C$; or, $xM : (x - .5)\Sigma C$)
- B. Ambiequal, where M and ΣC are approximately equal and have values of 1.5 to 2.5 ($xM = x\Sigma C$; or, $xM : (x + .5)\Sigma C$; or, $xM : (x - .5)\Sigma C$)

3. CONSTRICTED TYPE

- A. Very constricted, no movement and no color given ($0M = 0\Sigma C$)
- B. Constrictive, approximately no movement or color given
 $((0 - 1)M : (0 - 1)\Sigma C$; or, $(0 - 1)M : 0\Sigma C$; or,
 $0M : (0 - 1)\Sigma C$)

4. INTROVERSIVE TYPE

- A. Pure and very introversive, where M is greater than ΣC by 3.0 or more and no color is given ($xM \gg 0\Sigma C$)
- B. Very introversive, where M is greater than ΣC by 3 or more and ΣC is greater than 0 ($xM \gg y\Sigma C$)
- C. Introversive, where M is greater than ΣC by less than 3 but the formula is not constrictive ($xM > y\Sigma C$)
- D. Introversive, where M is greater than ΣC by less than 3 (2.5 to 1.5) and no color is given ($xM > 0\Sigma C$)

* D. Bryn, The problem of human types: comments and an experiment, *Char. and Person.*, 5 (1936) p. 49. By permission.

5. *Shading*. The shading responses as described by Binder (65, 66) were of two varieties: those which were characterized by diffusion (*hd*), found to be prompted by the general inner mood of the subject as distinguished from the emotional contact with the environment (color); and those which were characterized by use of the shading as a surface aspect ((*Fb*)) which reflect the sensitivity of the individual—the capacity to use sense experiences as an aid in adjustment. An excess of these (*Fb*) responses would indicate an oversensitivity approaching sensuality, an absence of them, a lack of refinement in contact with the objective world. Binder noted especially the lightness or darkness of shading responses, finding that, in the case of *hd*, the dark diffuse responses were associated with unpleasantly toned, and the light with pleasantly toned moods. Likewise the light (*Fb*) responses stand out from the dark in showing the delicacy of the sensitivity as contrasted with morbidity, depression, and anxiety. In the dark (*Fb*) responses the individual is manifesting a restrained, overconscientious type of adaptiveness.

Klopfer's further differentiation of shading responses provides the following interpretative clues:

- k*, *K* —an inner tension of a generalized "free-floating" nature. *k* represents an ineffective effort to intellectualize the anxiety and thus frequently accompanies feelings of intellectual inadequacy;
- FK* —a tendency to introspection in an attempt to gain perspective on the inner life;
- Fc*, *c*—corresponding most closely to Binder's (*Fb*)—the indicator of sensitivity or tact. Booth (84) would add that these responses are indicative of a reality adjustment impaired by some kind or degree of self-consciousness;
- C'* —a cold or frigid element in the personality assuming different values in terms of its relationship to other responses, especially color responses. If found in a record characterized by many chromatic elements, the use of achromatic colors may reveal artistic impressionability. On the other hand, in the record with few strong color responses, *C'* reveals depressive tendencies.

The *V*, or *vista* responses, in some respects corresponding to the *FK* of Klopfer, are interpreted by Beck as indications of feelings of inadequacy, of inner emptiness, of smallness, of remoteness from the outer world.

6. *The Psychogram.* Rorschach presented the determinants in tabular form which permitted comparisons between them by inspection. Later workers (Klopfer, etc.) have adopted a graphic description of the responses involving determinants. The "normal graph" is illustrated in Figure I.

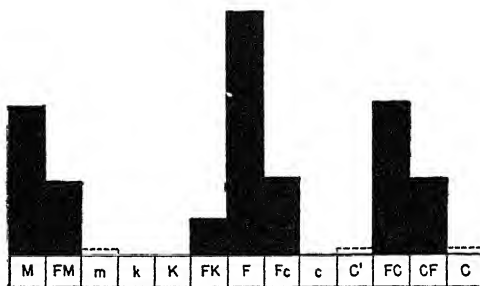


FIG. I. THE NORMAL RORSCHACH PSYCHOGRAM

Content. Content analysis has never been as important a part of interpretation as study of location and determinants. In his posthumous paper Rorschach discussed the psychoanalytic significance of the content of responses in a single record. Beck has continued to interpret content along psychoanalytic lines. An example is found in (51) where a response, "toupee," was interpreted as a defense against castration. A warning against assuming a symbolic meaning in all responses is sounded by Earl (154) who makes it a practice only to interpret content symbolically in the presence of *M*, *FM*, *m*, *k*, *K*, and *FK* determinants (never in the *F* responses). It is evident that the Rorschach may not provide as much insight into the fantasy life of the individual as many other projective techniques, notably the Thematic Apperception Test.

The average record usually contains mostly *H*, *Hd*, *A*, and *Ad* responses with a sprinkling of answers containing other content categories. The $\frac{A + Ad}{R}$ % of the record was shown by Rorschach to be an indicator of the amount of stereotypy in the individual, complementing the information secured by location scores and the *F*%, whereas the $(H + Hd)$ score is a sign of his maturity. A further

use of content is in comparing $(H + A)$ with $(Hd + Ad)$. A subjective estimate indicates that the optimum relationship is $2(H + A)$ to $1(Hd + Ad)$. A greater amount of detailed human and animal responses than the optimum is indicative of a critical tendency or of feelings of inferiority. When $(H + A)$ greatly exceeds the $(Hd + Ad)$ we may expect an absence of criticism or an overcompensation for feelings of inferiority. Hd by itself was interpreted by Guirdham (219) to reflect the extent of hypochondriacal tendencies. Definite interrelationships between $H\%$ and the Erlebnistyp were discovered by Kadinsky in his study of children (352). He found that in coarctated records the $H\%$ is a clue to the true Erlebnistyp and that low $H\%$ in introverted records shows mental immaturity.

Responses in other than the human and animal categories may reflect the person's variety of interests. Occasionally vocational interests will reveal themselves in content, although this is surprisingly infrequent.

Recently more interest has been shown in determining personality from the content of responses. Due and Wright (151) found de-realization (mythological distortion, qualifications toward the abnormal, and de-humanization), confusion of sexual identification, feminine identification, castration and phallic symbolism, sexual and anatomical responses, esoteric language and artistic references, and paranoid reactions to be typical of the content of the responses of male homosexuals (cf. also Bergman, 59, and Prados, 579). This might be compared with the finding that sexual responses are probably far more influenced by the removal of inhibition than by unusual sexual development (Guirdham, 219). Excessive reference to scientific, geographical, botanical, and anatomical facts has been noted by Goldfarb (200) and others as common in obsessionals. Later Goldfarb made a thorough analysis of the significance of animal responses (204), supplementing his analyses of the Rorschach by an animal association test. Jacob (333) found urogenital responses in 6 out of 12 stutterers. The complete or almost complete perseveration of anatomical responses has been studied by Ross (629).

Two lists of responses with significant content have been published by Lindner (449, 450). As illustrations, he finds that "eyes

looking at me" in the lower central *D* of Card IV or the *D* at the base of Card IX are typical paranoid reactions; the "human figures" in Card III interpreted as "puppets or marionettes" are given by schizoids who feel themselves directed, influenced, and manipulated by others who are hostile to them. Another approach to content interpretation is illustrated by Schachtel (657) who studied the dynamic aspects of perception involved in the Rorschach test, illustrating his point of view by analyses of the size of the objects seen by the patient. He pointed out that size was related to the subject's own feeling of strength or weakness, his identifications, his sadistic tendencies, and so on.

Popular and Original Responses. The popular responses are indicative of the amount of conformity of the individual with the average, "the degree of stereotypy and commonality of thought processes" (280). A very high *P*% may mean a fear of departure from the safe limits of socially approved behavior; a very low *P*%, an egocentricity and disregard for convention. *O*% seems to be an aspect of the intelligence, although the number of *O* responses considered apart from their quality cannot contribute greatly to an accurate picture of the intelligence.

Implicit in the foregoing description of the meaning of various scores is the emphasis that the meaning will vary in terms of the occurrence of scores in relationship to other scores. To observe the interrelationships is another part of the interpretation. Three phases of this analysis may be separated:

1. the occurrence of the responses in terms of the normal expectancy in the plates. The human movement response in Card III, where "two humans" are popularly seen, carries less indication of the ability to use movement than an original movement response in a portion of a card where movement is not frequently observed. In the same manner, the achievement of a satisfactory whole response to Card X, where such a response involves real difficulty, is a greater accomplishment than seeing a whole in Cards I or V which lend themselves readily to such responses.

2. the sequence of the responses. A response bears a value in terms of the responses that have preceded and the responses that

follow it. An example of the importance of this sequence examination has already been mentioned in the discussion of shock, where it was pointed out that the individual may regain equilibrium, remain disturbed, or become completely disorganized following the appearance of color, shading, or movement;

3. the comparison of various numerical scores by means of formulae. This has been anticipated also in the discussion of the mode of apperception (W, D, Dd), the Erlebnistyp or experience balance ($M:\Sigma C$), the human and animal responses ($H + Hd: A + Ad$) and the $W:M$ ratio.

A final part of the interpretation is isolation of various factors that relate to large areas of the personality. Klopfer (409) describes five such areas:

1. The intellectual aspects of personality, including:
 - a. the intellectual approach to adjustments demanded of the individual and shown in the manner of approach; and
 - b. the intelligence, shown by: the number and quality of W , the number and quality of M , the form accuracy level ($F+$), the number and quality of original responses, the variety of content, and the succession of responses.
2. The control aspects of the personality, including:
 - a. outer control, manifested chiefly in the FC responses ($FC: CF + C$), ($FC + CF + C : Fc + c + C'$), ($\Sigma C : M$) and ($\Sigma C : F\%$);
 - b. inner control, shown by M responses ($M : FM + m$);
 - c. repressive or constrictive control ($F\%$), $\frac{FK + F + Fc}{R}\%$, ($F : FK + Fc$), and ($A\%$).
3. The adjustment, as shown by the absence of the following signs of insecurity and anxiety:
 - a. anxiety: indications of anxiety in free comments; $K + k$; C' ; evasion by popular or vague responses;
 - b. compulsiveness: W compulsion, accuracy compulsion especially by increasing the Dd responses, completeness compulsion (rigid succession);
 - c. shock: color, shading or movement shock.
4. Erlebnistyp, shown in three ratios: ($M : \Sigma C$); ($FM + m$) : ($Fc + c + C'$); and $\frac{VIII + IX + X}{R}\%$.

5. Emotional aspects of the personality:

- a. emotional reactions to promptings from within: M ; $(W : M)$; $(M : FM : m)$;
- b. emotional ties with outer reality: $(FC : CF : C)$; C' ; $(Fc + c + C') : \Sigma C$; color shock; succession in responses to the colored cards; differences in readiness to react to color.

A novice in the use of the Rorschach cannot accomplish all these steps in the interpretation. Interpretative skill is built up only by observing the experienced worker as he deals with the problems of interpretation and by repeated personal attempts at interpretation under competent instruction. Training in the use of the method under an expert is thus a necessity in developing sound methods of interpretation. It is also essential that a large number (certainly not less than 100) tests be administered to individuals of various age and adjustment levels in order to develop an appreciation of the variety of responses possible. Even more basic to the use of the test is a thorough acquaintance with experimental, theoretical and clinical psychology. A further necessity is the possession of sufficient insight into the self and maturity of adjustment that the subjective elements in the scoring and interpretation may be achieved with as little emotional bias as possible. Effective scoring and interpretation demand from the examiner an empathy with the subject which must be relatively free from distortions caused by blind spots in the examiner's own personality. Such an ideal state cannot be easily reached, but prevention of the misuse of the technique may be facilitated by careful selection of students for training and by most careful supervision of their efforts during the learning period.

RELIABILITY AND VALIDITY

With a technique such as the Rorschach the measuring of validity and reliability is a critical issue. The exact measure of these qualities is difficult to ascertain, and as yet the studies that have set out to evaluate the method in these terms are few.

Reliability. The capacity of the Rorschach to yield reliable scores has been studied by three methods: test-retest, matching,

and split-half. The first method, test-retest, was described by Piotrowski (556) as the only satisfactory method of measuring reliability, even though personality changes in the interim may affect the scores. Kerr (380) used this method in retesting children after one year. She found relatively low scores for reliability. Such a result might have been expected, however, because of the personality changes taking place in such a long interval as she used. Brosin and Fromm (103) report that tests taken before, during, and after psychoanalytic treatment and other serial records show relative stability, especially in $F+\%$, $Erlebnistypus$, and the presence of color shock. The retest method at varying time intervals, as well as testing with the Behn-Rorschach plates, was used by Swift (717) in her analysis of the reliability of the Rorschach test with children. The reliabilities of individual scored items in retests at 14-day and 30-day intervals were only fairly satisfactory; after 10 months, unsatisfactory. Except for the FC score, the scores on the Behn-Rorschach had a fairly reliable relationship to the Rorschach test scores, comparing favorably with the retest reliabilities using only the Rorschach plates. Test-retest with a reverse order of the cards in one of the test situations (Rabin and Sanderson, 587) showed the Experience Balance to be a reliable score. The standard order of the cards produced more responses, more accurate responses and richer records in terms of the Rorschach factors involved.

Fosberg (173) administered the Rorschach test under various instructions: (a) standard instructions, (b) "to make the best impression," (c) "to make the worst impression," and (d) to look for various things one at a time. Fosberg concluded: "No matter whether the subjects try to make a good, bad, or indifferent impression, and even when each of the possible Rorschach factors is pointed out to them, the psychogram still remains recognizably like the standardly administered Rorschach." Varying time intervals between the tests were not found to affect appreciably the scores on the tests. A later, more thorough and controlled experiment (174), which first confirmed the capacity of the varying instructions to bring about changes in performance on the Bernreuter tests, produced the same highly reliable test-retest results.

Results somewhat at variance with those of Fosberg were recorded by Kimble (382) who gave the test under standard conditions and in a social situation (cafeteria, with at least two other people present). Differences (significant at the 2% level) were found in the $M : \Sigma C$ ratio under the two conditions. In the social situation ΣC increased and M was reduced. Pure C averaged .71 in the standard and 2.07 in the social situation.

The split-half method was described by Thornton and Guilford (727) as the only satisfactory method of measuring reliability. Vernon (44, 45) found that evidences from this method showed a poor reliability for the test. His results were in contrast with those of Hertz (272) who found a good reliability for individual scores. She compared the odd and even cards in 100 records selected at random from 300 records of junior high-school students. Some illustrations of the reliabilities of the 36 factors she evaluated are:

1. % Anat., O, and chiaroscuro (.9);
2. R, W%, $dr\%$, oligophrenic %, space %, color %, A %, H %, and number of forms verbally mentioned (.8);
3. $D\%$, $F+\%$, $M\%$, color score (.7)

The corrected scores gave an average of .829.

Thornton and Guilford (727) found satisfactory reliability for M and ΣC scores under standard conditions and under the conditions of more complete instructions giving hints as to possible approaches to the cards, with complete answering of all questions, and with an imposed time limit for each card. Reliability was reduced somewhat under the latter set of conditions for other factors than those quoted.

The reliability of scoring and interpretation of the test has been given only summary treatment. Hertz claimed that after objectification of the scoring a high degree of consistency was found between two scorers (281). Krugman (425) employed several methods in judging the reliability of the test with children. In the first instance two independent interpretations of the 20 records used were presented, in four groups of five pairs, to three judges. All identifying references to age and sex were removed. All three judges made a perfect score in matching,

showing that two Rorschach workers can interpret a record with very similar results. Secondly, the same judges rated the degree of agreement between the two interpretations. Essential agreement was shown in 89.6% of the data, fair agreement in 10%, and approximately equal amounts of agreement and disagreement in 0.4%. Krugman continued her examination of reliability by securing matchings of 25 scored Rorschach records with the interpretations. Six judges secured an average coefficient of contingency of .872 (highest possible with 5:5 matching, .894).

Validity. Some of the sources of error in validation studies with the Rorschach were pointed out by Beck (44, 45). He spoke of the difficulties created by undefined concepts of the personality used in case histories and Rorschach interpretations, the "halo effect" from the examiner's observations of the subject during the test, and the lack of clinical understanding of the processes revealed by Rorschach scores. While such errors cannot easily be overcome, studies of validity show generally a satisfactory relationship between Rorschach interpretations and clinical data.

A method of measuring validity which appears in many publications is well illustrated in the case study of Lillian K. (9, 118, 355, 493). In this method an interpretation from a single record is compared with the information about the case secured from other sources.

A second method of arriving at validity is to deduce diagnoses from records and to compare these with diagnoses arrived at through clinical studies using other instruments. Benjamin and Ebaugh (56) matched diagnoses arrived at through blind interpretations of the Rorschach with psychiatric diagnoses. They were completely successful in 39 out of 46 cases; diagnoses were comparable in the 7 remaining tests. The validity would then fall somewhere between 84.7% and 97.8%. Brussel, Grassi, and Melnick (106), using the Graphic Rorschach, diagnosed 16 cases in complete agreement with clinical diagnoses. They achieved 93.1% success using the verbal Rorschach. Brussel and Hitch (107) found complete agreement in 66% of the cases between the Rorschach and clinical diagnoses in 50 patients, essential agreement in 20%, and partial agreement in 12%.

A further validation method has been through the use of

matchings. The most widely quoted of such studies was a comparison of three blind diagnoses by outstanding Rorschach workers. Hertz, Beck, and Klopfer interpreted a record submitted to them by Hertz and Rubenstein (308). A comparison of the analyses showed a high degree of reliability between the interpretations, and that the interpretations validly related themselves to clinical data. Some disagreements were noted, however, and some emphases appeared in one interpretation and were neglected in the others.

Teachers' ratings of 30 preschool children were matched by an experienced Rorschach worker with personality descriptions based on the Rorschach tests in a study by Swift (716). A score significantly better than chance (1% level) was secured. Young and Higgenbotham (780) checked Rorschach interpretations against behavior notes on 21 boys at a psychiatric camp. They reported that the Rorschach gave a total personality picture not inconsistent with the records. Single determinants in the Rorschach and simple relations between the scores were of little prognostic value as to adjustment at camp.

Krugman (425) constructed chart outlines of Rorschach interpretations and of case-history materials in 25 cases. These were matched in groups of five pairs by five judges. A highly significant degree of relationship (average Coefficient of Contingency, .850; maximum possible, .894) was obtained. A second study of validity was accomplished by securing ratings on a 5-point scale for four aspects of the case-history material, and similar ratings for the same four aspects of the interpretations. Essential agreement was recorded by the five raters in 73.0% of the ratings; fair agreement in 21.2%; about equal agreement and disagreement in 5.0%, and slight agreement in 0.8%.

Apart from validations of interpretations of the total record, many studies have contributed information on the validity of separate scoring categories. Two illustrations, one positive and one negative, will suffice. Earl (154) evaluated the validity of symbolic interpretations of content by securing free associations under hypnosis. He reported a high validity if adequate precautions were used in assigning symbolic significance to the responses. Swift (718) found no direct relationship between signs

of anxiety in the Rorschach records of 50 preschool children and teachers' ratings of the children on a 15-item scale of insecurity indications. A comparison with Rorschach signs of data on nine factors related to anxiety as secured from the parents gave a similar unsatisfactory relationship.

While the above are representative of the studies which set out specifically to measure the validity of the test, it must be remembered that the extensive comparisons of Rorschach data in clinical and normal groups are, in themselves, validation studies. References to these studies will be found in the following listings of research studies using the Rorschach.

RESEARCH STUDIES AND APPLICATIONS OF THE RORSCHACH METHOD

The extensiveness of the research involving applications of the Rorschach prohibits a detailed survey of each contribution. The picture of the Rorschach technique would not be complete, however, without some indication of its uses. An effort has been made to organize the lengthy bibliography in order to point up the range of studies and to make possible easy reference to those studies made of various applications of the test. The list of references will serve also to reveal those areas of application which have been most thoroughly developed. It is hoped that this will serve as a stimulus to the extension of research with this valuable method in those areas where little evidence has been gathered.

In the case of some of the clinical studies an important study or some significant findings in the field are quoted and other contributions in the same area are indicated by reference numbers. The choice of a study for quotation does not imply that the other studies are necessarily less significant, though in many instances this is true. The choice has been determined upon the basis of the topic studied, the method as representative of possible technique in Rorschach research, or the significance of the findings in further applications of the test.

*Clinical Studies**Neuroses*

Beck (50, 51); Bustamante (114); Harrower-Erickson (253, 254, 256); Jacques (336); Koff (417); Krauss (423); Levine (439); Mahler-Schönberger (473); Miale and Harrower-Erickson (495); Oberholzer (526); Piotrowski (554); Rapaport, Gill, and Schafer (592); Rorschach (617); Rosenzweig (625); Ross (628, 631, 632, 635); Schatia (665); Singeisen (690); Van Bark and Baron (736); Varvel (740). Review and comments: Beck (48); Benton (57); Bergman, Graham, and Leavitt (60); Brosin and Fromm (102); Klopfer and Kelley (409); Piotrowski (555); Ross (629).

The study by Miale and Harrower-Erickson (495) into the signs of neurosis in the Rorschach performances has been of distinct service in diagnosis. They gave the test to 43 patients representing various subgroups of neurosis and to 20 normals as a control group. Nine characteristics of neurotic records were found, any five of which occurring together were felt to be definitely suggestive of psychoneurosis. The signs were:

1. The number of responses, not more than 25 (93% of neurotic cases, 30% of normal);
2. The number of *M*, or human movement, not more than one. (74% of neurotic, 0% of normal);
3. *FM* greater than *M* (neurotic— $FM > M$ in 67%, $FM = M$ or both absent, 23%, $M > FM$, 12%; normals—70% $M > FM$, 15% $FM > M$);
4. Color shock (98% of neurotic; 20% of normals);
5. Shading shock (81% of neurotic; 20% of normals);
6. Refusals to one or more cards (47% in neurotics; absent in normals);
7. *F*% higher than 50% (51% in neurotics; 20% of normals);
8. *A*% higher than 50% (58% of neurotics; 25% of normals);
9. *FC* not more than one (81% of neurotics; 20% of normals; 70% of neurotics produced no *FC*, only 10% of normals lacked *FC*).

The average number of signs in the neurotic group was 6.5 (range 3–9); in the normal, 1.5 (range 0–3).

In a more thorough study of these signs Harrower-Erickson (254) modified two of them, giving *Anat.*% of over 50% the same significance as *A*% over 50%, and giving importance to the sign "*FC*" only in those cases where no *FC* was found. A weighting system for the signs was also introduced. "*Refusals*," *FC*, and "*Shading shock*" were assigned three points; "*M*" and "*Color*"

shock," two points; "F%," "A%," and "R," 1 point each, and "FM>M," 0.5.

While the signs cannot supplant more thorough individual analysis of records, they facilitate a rapid selection of possible neurotic records from normal records. The precise ability of the signs to distinguish the neurotic from the psychotic has not been fully evaluated; the present conclusion is that differential diagnosis between neurosis and psychosis must depend on other indications from the records, since many psychotic subjects will evidence five or more signs.

Psychosomatic or Physical Illnesses

1. Amputees—Mahler-Schönberger and Silberpfennig (472)
2. Asthma—Schatia (665)
3. Cardiac conditions—Booth (87); Hackfield (227); Kemple (374-375); Singeisen (690)
4. Chronic arthritis—Booth (83, 85-88); Klopfer (388)
5. Fracture—Kemple (374)
6. Graves' syndrome—Hackfield (227)
7. Migraine—Ross (637)
8. Multiple sclerosis—Burgemeister and Tallman (111)
9. Neurocirculatory asthenia—Ross (635)
10. Post-choreic—Krauss (423)
11. General medical practice—Holtzman and Holtzman (318); Lindner and Seliger (454)

Schizophrenia

Beck (42, 48, 50); Benjamin and Ebaugh (56); Binswanger (69); Bleuler (77); Böszörményi and Mérei (91); Dimmick (141); Grassi (213); Hackfield (227); Hirning (315); Hylkema (328); Just (348); Kallman, *et al* (353); Kelley and Klopfer (368); Layman (436); Piotrowski (562, 570); Rapaport, Gill, and Schafer (592); Rickers-Ovsiankina (602); Rorschach (617); Sender, Klopfer and Rickers-Ovsiankina (679); Skalweit (693-695); Tschudin (730); Wittman (773). Review and comments: Guirdham (221, 222); Klopfer and Kelley (409); Monnier (502); Schneider (672, 673).

Rorschach, Skalweit, Rickers-Ovsiankina, and Beck have all made early and rather full studies of the records of schizophrenics. For illustrative purposes the experiment of Beck (42) will be condensed here, although other experiments of comparable significance might have been selected in its place. Beck

collected and analyzed records from 81 schizophrenics and 64 normal control subjects arriving at the accompanying table of means of scores in the two groups (Table XI)

TABLE XI

MEANS OF 16 SCORES IN RORSCHACH RECORDS OF 81 SCHIZOPHRENICS AND 64 NORMALS (After Beck, 42)

MEAN SCORES				MEAN SCORES	
	<i>Schiz.</i>	<i>Normal</i>		<i>Schiz.</i>	<i>Normal</i>
<i>R</i>	33.27	30.35	<i>C</i>88	.28
<i>W</i>	4.44	5.86	<i>CF</i>	2.2	1.39
<i>D</i>	19.02	19.88	<i>FC</i>58	1.34
<i>Dr</i>	8.83	5.62	<i>FY</i>	2.07	2.54
<i>Z</i>	24.26	31.1	<i>F+</i>	61.54	83.91
<i>DW</i>83	.11	<i>A</i>	41.05	46.87
<i>M</i>	2.84	3.33	<i>Ds</i>	2.51	1.76
ΣC	3.71	2.75	<i>P</i>	3.95	5.92

Schizophrenics were thus shown to be distinguished from normals in the following characteristics:

1. On the average, they are more sensitive to rare detail;
2. Presence of *DW* adds support to the diagnosis;
3. Normal *W*, *D* and *Dr* approach is much less likely to occur;
4. They tend towards confused order (if present, almost certainly sick; if order is methodical or irregular, it is not necessarily an indication of health);
5. High pure *C* (full statistical reliability) and high *CF* (high reliability);
6. Low *FC* (full statistical reliability);
7. (ΣC minus *FC*) is high (statistically reliable);
8. *F+* % lower;
9. *P* lower.

Other signs which occurred in the schizophrenic records were:

1. *Po*, position response;
2. Reversal of figure and ground;
3. Change of tempo (fluctuation in number of responses to cards, or *F+* next to *F-*);
4. Perseveration and monotypical productions;
5. Contaminations;
6. Descriptions;

7. Complete rejections;
8. Self reference;
9. Unintelligible language, sometimes neologism, sometimes juxtaposition of unrelated words.

Paranoid

Rapaport, Gill, and Schafer (592); Rorschach (617); Stern and MacNaughton (705); Stern and Malloy (706, 707).
Reviews and comments: Benton (57); Brosin and Fromm (103); Klopfer and Kelley (409).

Depressive States

Beck (42, 48, 50); Guirdham (221, 222); Klopfer and Kelley (409); Levy and Beck (444, 445); Rapaport, Gill, and Schafer (592); Rorschach (617); Varvel (740); Wittman (773); Zolliker (783).

Rorschach's findings with depressive cases (617) have been confirmed in general by other investigators. Rorschach noted an increase in $F+\%$ and $A\%$, more rigid succession, and decreases in W , M , and color. The effect is one of a constriction accompanied by effort to achieve, leading to a reduction in the number of responses, frequently making the obtaining of a personality picture difficult and often preventing more precise definition of the type of depression.

Manic States

Beck (42, 48, 50); Klopfer and Kelley (409); Levy and Beck (444, 445); Wittman (773).

In contrast to the records of the depressed, Rorschach found that with excited states the $F+\%$ decreases, M , C , and $O\%$ increase, as do the wholes, although frequently the W are of a poor quality including confabulatory responses. The $A\%$ remains about normal or slightly higher. Later studies have supported Rorschach in these conclusions.

Psychopathic Personality and Delinquency

Boss (90); Boynton and Wadsworth (94); Day, Hartoch and Schachtel (135); Dubitscher (147); Endacott (155); Endara (156-158); Geil (196); Gozzano (210); H. Hertz and Wolfson (271); M. R. Hertz (301); Jarrin (338); Kelley (364); Kogan (419); Lindner

(448-450); Luc, (467); Pennington (539); Pescor (540-542); Rabin (586); Rapaport, Gill, and Schafer (592); Schachtel (659); Schmidl (668); Zulliger (797).

Studies on juvenile delinquency are inconclusive. For example, the classical experiments of Zulliger (797) and Endacott (155) stand in sharp contrast to one another. Zulliger found that confabulatory responses (*DW*), a predominance of crude color responses (*CF + C*) over (*M + FC + shading*) responses, and an extratensive *Erlebnistyp* were typical. Fairly typical were a confused or loose succession, white-space responses, high *A*% and low *H*%. Endacott, on the other hand, found a reduction in productivity (lowered *R*), normal mode of apperception, white space and oligophrenic responses the same or less than in normals, higher *F*%, lower *M* and color, infrequent shading responses, about the same average per cent of *A*, *H*, and *P* responses as in normals, and a significantly low organization score. The results in these early experiments are indicative of the lack of uniformity in results. While psychopathology presents no specific pathological personality picture in the Rorschach, it was found by Geil (196) that there was a striking similarity between the records of adult criminal psychopaths and prepubertal boys. Lindner (448) confirms the absence of signs that would enable the examiner to distinguish the record of the psychopath from the normal, yet he notes qualitative differences. Psychopathic records are characterized by:

1. Superficiality, as shown in the poor quality of the movement responses and the defensiveness in the sequence. Raw and crude color responses are followed by inhibition and withdrawal; anxiety factors lead to a clinging to reality (*F*) as over-compensation for the insecurity beneath the surface;
2. Avoidance—shying away from self-disclosure by rejections or obvious, banal responses;
3. Explosiveness in content and sequence, followed by avoidance;
4. Incompleteness—unfinished concepts or hastily constructed concepts;
5. Egocentricity—self-references, self-involvement in the content, symbolistic references pointing at the core of the object, or, at the central figure surrounded by others, and identification with the important thing or figure in a concept.

Alcoholism

Billig and Sullivan (63, 64); Bleuler (77); Cranford and Seliger (129); Halpern (235); Jastak (339); Karlan (356); Kelley and Barrera (366); Kennard, Bueding, and Wortis (377); Klopfer (398); Rosenwald (621); Weber (754).

An illustrative experiment involving alcoholics is the investigation by Billig and Sullivan (63) into the prognostic indications in the Rorschach in cases of chronic alcoholics. Forty cases ranging in age from 22 to 62 years were given the Rorschach and 29 of them were followed for a year. The cases whose later adjustment was evaluated following treatment were divided into three groups: 1. first admissions for alcoholism, not drinking since discharge; 2. admitted more than once, drinking again, but carrying on their vocations; 3. drinking again and unable to carry on their work. In addition to the general findings of characteristics of alcoholics, the authors developed a list of indications for unfavorable response to treatment:

1. Those signs given one point:

$$K > 1; k > 1; c > 1; M < FM; FC = \text{or} < 1; FC < (CF + C); \\ \frac{VIII - X}{R} < 30\%; Hd > H; At > 1; (W+) < M;$$

2. Those signs given two points:

$$\frac{W+}{W} \% < 33.3\%; D < 50\%; (Dd + S) > 10\%; F > 60\%.$$

On this basis the patients in group 1. show between 3 and 6 points; those in group 3., between 9 and 15. While these scores do not discriminate well between groups 2. and 3., a more thorough statistical treatment might improve their effectiveness.

Organic Conditions (except epilepsy)

1. Brain lesions—Harrower-Erickson (248); Nadel (524); Piotrowski (550); Rashkis (594); Tallman (723, 724)
2. Cerebral arterio-sclerosis—Hitch (316)
3. Cerebral tumors—Harrower-Erickson (244); Nadel (524)
4. Dementia paralytica—Kogan (418); Oppenheimer and Speyer (532)

5. Parkinson's disease—Aubrun (15); Booth (87); Brambilla (96); Ionescu-Sisesti and Copelman (331); Tumin (734); Veit (743)
6. Pick's disease—Goldstein (207); Piotrowski (549); Sanders, Schenck, and Van Veen (644)
7. Post-traumatic disorders—Aita, Reitan, and Ruth (6); Benton and Howell (58); Brussel, Grassi, and Melnick (106); Kogan (418); Oberholzer (528); Zangwill (781)
8. General—Beck (50); Benton (57); Harrower-Erickson (242); Kelley (363); Klopfer and Kelley (409); Levine (439); Oberholzer (527); Piotrowski (546, 547, 557, 561, 562); Putnam (581); Rorschach (617); Ross (630-632); Schenk (666)

The studies of Piotrowski (546, 547, 557, 561, 562) in organic cases are among the most valuable for clinical diagnosis, although their findings have not been entirely accepted by other experimenters. Following upon the research of Oberholzer with differential diagnoses, Piotrowski used some of Oberholzer's findings and added some of his own to develop a list of 10 "organic signs" (cf. pp. 95-96). He evaluated these signs first (546) with 18 organic cases with involvement of the brain cortex, 10 cases with non-cerebral disturbances of the central nervous system and 5 cases of conversion hysteria. The average number of signs in the cortical-subcortical group was 6.2; in the other groups, 1.5. The highest number of signs in the non-cortical group was 3; the lowest in the cortical-subcortical group was 4 (one case). The presence of 5 signs was established as the critical score. The second study (547) confirmed the usefulness of the signs in a case with Pick's disease. Seven out of the 10 signs were found in this patient. A later study (561) supported the results of these previous experiments "provided adequate precautions are taken in obtaining a satisfactory record and in adhering closely to the definitions of the signs when scoring the records." The first precaution is essential in those cases with complete or nearly complete anatomical perseveration as discussed by Ross (629). Under such circumstances Ross suggested a retest in which the subject is specifically requested to avoid anatomical responses.

Epilepsy and Convulsive States

Altable (7); Arluck (13, 14); Barrera (22); Borges (89); Bovet (93); Brown and Orbison (104); Drohocki (142); Eyrich (163); Gozzanc

(210); Guirdham (220); Harrower-Erickson (245, 249, 251); Kelley and Margulies (371); Piotrowski and Kelley (575); Richards (597); Stainbrook (698, 699); Stauder (701)

There is rather general agreement in Rorschach findings in epilepsy that no specific patterns are discoverable in the records. Guirdham (220), using 132 epileptics and 100 control normals as subjects, found the most striking evidences of epilepsy were:

1. Deficiency of abstractive synthesis (low $W\%$, high $Dd\%$);
2. Association of extratensive factors with strong indications of confabulation;
3. The process of perseveration.

Arluck (13, 14) conducted a carefully controlled study of 20 "idiopathic" epileptics, siblings of the epileptic patients equated with the epileptic group for age, sex, education, etc., a group of patients with cardiac disease, and their siblings. The cardiac group was introduced to eliminate the specific effects of an organic illness upon the test scores. The results of Guirdham were proven valid for the most part, and such differences as were noted might be explained on the basis of the different age levels of the subjects of the two experimenters. Arluck reported that the epileptics showed significantly more color shock (Brosin-Fromm signs), higher $\frac{F}{FK + Fc}$ ratio, more than $2M : FC$, reduced W , lower range of content, $\frac{T}{R}$ significantly higher, and a trend to greater maladjustment in the records of those with the longest duration of illness. The deteriorated epileptics were found to have fewer M 's, lower $F\%$, no ability to produce W , or, only W 's due to perseveration, and more color than movement scores.

Miscellaneous

1. Adult enuresis—Goldman and Bergman (206)
2. Body types—Enke (160); Göbber (197); Kluever (416); Kretschmer (424); Krugman (425); Munz (521); Schneider (672); Skalweit (694)
3. Carbohydrate and anoxia tolerance—Freeman *et al* (184); Hertzman, Orlansky, and Seitz (312); Hertzman and Seitz (313)
4. Conscientious objection—Rabin (585)

5. Fatigue—Klebanoff (387); Raines and Broomhead (588)
6. Malingering—Benton (57); Rosenberg and Feldberg (620)
7. Sexual disorders—Bergman (59); Bradway, Lion, and Corrigan (95); Drope (144); Prados (578)
8. Stuttering—Ingebregtsen (329); Krugman (430); Meltzer (489-492); Richardson (599, 600)

General Clinical Applications

Aguiar (5); Harrison (241); Harrower-Erickson (246, 252); Hertz (301); Ionasiu *et al* (330); Juarros (345); Kelley and Barrera (365); Kuhn (432); Laignel-Lavastine *et al* (434); Line and Griffin (455); Louttit (465); MacCalman (470); Michael and Bühler (496); Ricci (596); Ross (630); Schmidt (669); Sisk (691); Skalweit (692); Weil (757)

Consulting psychology: Barry and Sender (23); Sender (676)

Military psychiatry: Deutscher (139); Garfield (195); Greenwood, Snider, and Senti (215); Harrower-Erickson (243); Holzberg (319, 320); Hutt (325); Hutt and Milton (326)

Psychiatric Treatment

1. Prefrontal lobectomy and lobotomy—Freeman and Watts (185); Hunt (321); Kisker (385); Klopfer (389)
2. Psychotherapy—Enke (159); Harris and Christiansen (240); Hertz (302); Kamman (354); Siegel (688)
3. Shock therapies—Beck (46); Cheney and Clow (117); Dubin (145); Goldstein and Rothmann (209); Graham (212); Halpern (234); Katz (357); Kelley, Margulies, and Barrera (372); Kenyon, Rapaport, and Lozoff (378); Kisker (384); Lowenbach and Stainbrook (466); Piotrowski (559, 560, 563); Rymer, Benjamin, and Ebaugh (641); Schnack, Shakow, and Lively (670)
4. Surgical treatment—Nadel (524)

Drugs

1. Histamine—Robb, Kovitz, and Rapaport (605); Wertham and Bleuler (765)
2. Hyoscine—Clarke (119)
3. Morphine—Brown (105); Fraenkel (181)
4. Mescaline—Guttman (225)
5. Sodium amytal—Kelley and Levine (369); Kelley *et al* (370); Layman (436); Orbison, Eisner, and Rapaport (533); Wilkins and Adams (769)

Hypnosis

1. In diagnosis—Hackebush, Blenkovski, and Fundyler (226); Rorschach and Oberholzer (618); Wilkins and Adams (769)

2. Induced moods—Levine, Grassi, and Gerson (441)
3. Prediction of hypnotizability—Brenman and Reichard (101); Madow (471); Sarbin and Madow (651)
4. Regression—Bergman, Graham, and Leavitt (60)

The Determination of Intelligence

Mental Deficiency

Abel (1); Abel, Piotrowski, and Stone (3); Barry and Sender (23); Beck (26, 27, 30, 42, 48, 50, 53); Clarke (119); Day, Hartoch, and Schachtel (135); Dubitscher (147); Dworetzki (153); Kallman *et al* (353); Keller (359); Kelley and Barrera (367); Klopfer and Kelley (409); Kubo (431); Patterson and Magaw (536); Pfister (543); Piotrowski (548); Rorschach (617); E. K. Sarason and S. B. Sarason (646); S. B. Sarason (647); S. B. Sarason and E. K. Sarason (648, 649); Schneider (671); Werner (763, 764)

Average Intelligence

In many studies, especially as controls.

Cf. Gardner (194); Keller (359); Klopfer and Kelley (409)

Superior Intelligence

Fuchs (188); Harriman (239); Harrower-Erickson (243); Klopfer and Kelley (409); Maza (487); Rorschach (617)

The Rorschach in Childhood, Adolescence, and Old Age

Childhood

Barison (21); Davidson (132); Dubitscher (148); Dworetzki (153); Ford (172); Franco (175, 176); Gair (191); Geil (196); Goldfarb and Klopfer (205); Hertz (276, 301); Hertz and Ebert (305); Hunter (324); Juarros and Soriano (347); Kay and Vorhaus (358); Kerr (380); Klopfer (396, 397, 401, 403); Klopfer *et al* (411); Loosli-Usteri (458, 460, 463); Löpfe (464); Maza (487, 488); Paulsen (537); Rose and Stavrianos (619); Schachtel (654); Schachtel and Levi (656); Shapiro (682); Stavrianos (702); Sunne (714); Swift (715-719); Vernon (747); Vorhaus (750, 751); Weber (755)

Adolescence

(Anon., 9); Baker (17); Goldfarb (200-202); Goldfarb and Klopfer (205); Greulich *et al* (216); Hertz (285, 288-290, 299, 301, 303, 304); Hertzman and Margulies (311); Jacobson (335); Kaplan (355);

Loosli-Usteri (458, 463); Löpfle (464); Margulies (478); Miale (493); Piotrowski (467); Schapiro-Pollack (664); Stainbrook and Siegel (700); Soares (712, 713)

See also Delinquency (pp. 141-42) and Childhood (above).

Guidance in Childhood

Barry and Sender (23); Beck (28); Davidson (132); DesLauriers and Halpern (138); Ganz and Loosli-Usteri (193); Goldensohn, Clardy, and Levine (198); Goldfarb (199); Goldfarb and Klopfer (205); Harrower-Erickson (248); Harrower-Erickson and Miale (262); Hertz (301); Juarros and Soriano (346, 347); Krugman (428, 429); Loosli-Usteri (459); Maza (487); Ombredane *et al* (531); Patterson and Magaw (536); Piotrowski (548, 571); Sender and Klopfer (678); Sterren (710); Werner (764); Zulliger (789, 790, 793)

Old Age

Klopfer (398); Prados and Fried (580)

Familial

Siblings-Bleuler (75, 76); Kerr (381); Kisker and Michael (386); Saudek (653); Troup (728); Troup and Klopfer (729)
Parent and child-Bühler (110)

Vocational Characteristics and Guidance

Balinsky (18); Barry and Sender (23); Bigelow (62); Brendgen (100); Harrower-Erickson (243, 250); Hertz (301); Kaback (350, 351); Linn (457); Molich (501); Piotrowski (567, 569); Piotrowski *et al* (574); Prados (578); Roe (608-612); Roemer (613, 614); Ross (634); Zulliger (789, 793)

Educational Uses

Barry and Sender (23); Behn-Eschenberg (54); Cowin (127); Dubitscher (148); H. Hertz and Wolfson (259); Margulies (478); Munroe (508, 510, 511, 515-517, 519); Piotrowski (567); Powell (577); Steinzor (704); Zulliger (792, 793)

Social Work

Barry and Sender (23); Epstein and Apfeldorf (162); Krafft (421); Krafft and Vorhaus (422); Schmidl (667); Tulchin (732)

Legal Applications

Aguiar (4); Brussel, Grassi, and Melnick (106); Frankel and Benjamin (182)

Cultural and Racial Studies

Abel (3); Barry and Sender (23); Beck (38); Bleuler and Bleuler (79); Cook (123); DuBois (149, 150); Franco (175); Frenkel-Brunswik and Sanford (186); Hallowell (228-233); Henry (268); Hertz (301); Hunter (322, 323); Rizzo (575), Schachtel, Henry, and Henry (655); Stainbrook and Siegel (700); Tulchin and Levy (733)

Comparisons with Other Techniques

1. Concept-formation tests—Hanfmann (237)
2. Drawing—Munroe (517); Munroe, Lewinson, and Waehner (520)
3. Experiments with color—Coyne (128); Oeser (530); Ruesch and Finesinger (640)
4. Graphology—Barry and Sender (23); Diethelm (140); Drope (144); Halvorsen (236); Hartoch and Schachtel (267); Lewinson (446); Munroe (517); Munroe, Lewinson, and Waehner (520); Saudek (653); Schade (663)
5. Intelligence tests—Levinson (442); Piotrowski (551); Sill (689); Varvel (741); Williams (771)
6. Personality inventories—Piotrowski (572)
7. Shadow pictures—Rombouts (616); Stern (708, 709)
8. Tautophone—Shakow and Rosenzweig (681)
9. Variety of methods—Dalla (130); Murray (522); Rosenzweig and Clark (627); Wittman (773)
10. Word-association—Van der Waals (737); Wells (761)

GROUP METHODS

A brief note on the modifications of the Rorschach method for group administration must be appended. Four methods for use of the test in groups have been advanced.

The first method, in which the Rorschach plates are projected on a screen by means of slides for a controlled time, secures written responses. It was developed by Harrower-Erickson and Steiner (247, 255, 258, 260, 263, 264, 265). Elaborations in technique have been worked out by Buckle and Cook (109) and Lindner (451). Studies of the value of this group method have

been made by Abel (2), Hertz (300), Hertzman (309, 310), Klopfer (414), Montalto (504), Munroe (510, 515, 516), Ross (636), and Rottersman and Goldstein (639). The test administered in this manner cannot give as full a picture of the personality as that secured by individual administration. Time measurements, many aspects of the inquiry, behavior notes, and the unlimited freedom of the individual test situation are sacrificed; color scores appear to be distorted in many instances, and yet in many respects the group test results are comparable with those secured in individual administration. The group test promises to be most useful as a preliminary screening test.

The second method, the Multiple Choice Rorschach, also the invention of Harrower-Erickson (257), gave the subject a list of responses from which to choose. The plates were again projected on a screen. This test has not proved to be a valid or reliable instrument, as shown by Balinsky (19), Blair (73), Challman (116), Jensen and Rotter (340, 341), Lawshe and Forster (435), Malamud and Malamud (474, 475), Springer (697), Winfield (772), Wittman (773-775), and Wittson *et al* (776).

The third method, the ranking of multiple responses, has been proposed by Eysenck (164). His preliminary study gave encouraging results, suggesting that rating might prove superior to multiple choice as a method. Further studies with rating have not as yet been reported.

The fourth method, also in the exploratory stages, is the self-administering Rorschach. Munroe (518) has prepared instructions for this administration, and has arranged for a small group of applicants to college to take the test for experimental purposes. In its present form the self-administering test needs many refinements which are in progress.

Note should also be taken of the recently advanced method for rapid scoring of the Rorschach, called the Inspection Technique. This provides a method for rapid (15-minute) evaluation of records. The originator of the method by which an adjustment score is secured, Munroe (509, 512), has reported its successful use in the prediction of college success or failure. Criteria for 28 items to be checked have been described in detail in the manual for the Technique (512). In the college group with

which the method has been worked out, extremes of adjustment and maladjustment were separated with a high degree of accuracy. The middle range of scores did not prove so valid in discriminating between the students. The publication of the minute instructions for using Inspection has made available to research workers another potentially valuable experimental instrument.

SUMMARY

The best evidence of the usefulness of the Rorschach lies in the lengthy bibliography to follow (798 references). While the criticism has been leveled at Rorschach workers that they disregard scientific method and use a sort of magic to gain the results they report, the quality of the literature is evidence that the approaches of science have not been disregarded even though traditional methods have been modified and new methods have been applied. The distinct impression is gained that the best critics of the Rorschach technique are found among its exponents. It is regarded generally, by those who use it, as a method which still needs much development and must, even in its present state, be used with caution as well as with enthusiasm. The Rorschach technique presents the best picture of the possibilities in projective techniques. Its current usefulness is the product of the quantity and quality of research which has been carried on over the 26 years since the publication of *Psychodiagnostiks*. This research is a dramatic illustration of the type and extent of work needed to make a worthwhile clinical instrument from a proposed projective technique. The Rorschach method should serve as a deterrent to those who fancy that a little imagination, some superficial experiments, and a facile pen may offer to psychology a valid and reliable projective test for the study of personality. Even more so, however, the extent of Rorschach research should provide a stimulus for comparable scientific experimentation with other potentially useful techniques and criteria by which to evaluate their effectiveness.

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CHAPTER VII

CLOUD PICTURES

FOLLOWING the advice of William Stern, Struve (2) elaborated a series of three cloud pictures to act as meaningless visual stimuli for producing fantasy. The development of the pictures was, in part, a criticism of the Rorschach inkblots, which Stern felt were less valuable for projection than cloud pictures because outlines are sharp and unmistakable and because the configurations are wholly symmetrical. Struve's pictures consist of cloud-like, indefinite, shaded masses; one with the most distinct shades and forms, a second and intermediate one, and a third, the vaguest one. The original administration of the test by Struve was comparable to the taking of the protocol in the Rorschach. The verbal responses were recorded, areas used were traced, and full behavior notes were taken.

Struve experimented with the pictures using 14- and 15-year-old children, and evaluated the records according to five typical modes of interpretation, based on the form rather than the content of the responses. The five groups into which the responses fell were: 1. *enumerative* type—single, disconnected objects pointed out with no attempt at synthesis; 2. *explanatory* type—single objects conceived abstractly and the relations between them interpreted logically; 3. *intuitive* type—total views in plastic and realistic form; 4. *inventive-unregulated* type—uncontrolled invention, unrealistic connections and goal-less fancy; 5. *inventive-regulated* type—total situations and stories of original invention and superior goal-directedness are created. An example of this last type is found in the following quotation from Struve:

Subj. "I see a man. Here's a boat and a dog."

Exper. "Won't you write them on the margin?"

Subj. "Not yet. There is more. Perhaps they belong together—the boat is a canoe. Here, above, are faces in the wood—they are ghosts."

These people are Indians. Here is a man with a cap; it is a white man. Perhaps he is the teacher of the tribe. No, he is not (apparently because it does not fit into the dawning context). Here is somebody lying down. He is already dead. There is a struggle between Indians and white men. The dog is watching the canoe. The ghosts in the background are the idols of the tribe (note this change of interpretation). They are to help the struggling Indians. Here are blocks of stone, the water in between them. They have come here in the canoe. This is another idol—with such a big nose, too, and a large mouth. He is going to attack the white man from behind. Perhaps the whole scene occurs in a wood,—or, rather, in a subterranean grotto.”

Exper. “Why?”

Subj. “Because here are rocks and water, and they have hidden their idols here. (The new conception of the grotto leads immediately to an interpretation that explains the idols and the struggle within the grotto). Here is another man with a hat. (This figure was interpreted in the beginning as a teacher. Now he is inserted into the context). I suppose he is shooting from an ambush. But perhaps he is helping the hurt people. . . . (Finally, as if he would sum up the results of the whole process, he ends with these words:) Title, ‘Struggle for idols in a grotto.’”¹

This example of a fantasy produced by the first and most distinct of the pictures is illustrative of the richness of content of a productive and superior subject. Although Struve did not emphasize the content, it is clear that such fluency permits interpretation on that level also.

Retaining the Struve pictures, Stern (1) improved the method with the aim of giving it a standard form. As developed by him, the experimental procedure consisted of three periods. 1. In the first, the instruction was, “Look at this and tell me how you like it.” If no definite response was forthcoming, “What do you see in the picture?” The protocol was recorded from these responses. If the subject didn’t offer to turn the cards he was told that he might do so. 2. The second period was devoted to the drawing task. The subject was instructed to outline the various items and write their names in the margins. There was no prompting unless

¹ W. Stern, *Cloud pictures: a new method for testing imagination*, *Char. and Person.* (Durham, N. C.: Duke Univ. Press), 6 (1938), 135. By permission.

the subject failed to include all the items mentioned. The number of items prompted was recorded. 3. In the third period, a test of suggestibility was administered. The suggestion was made: "Some people have found a ——— in this picture. Do you see it?" Three types of objects were suggested: (a) asymmetrical familiar objects, such as a dog, cat, etc.; (b) symmetrical familiar objects such as a bat, butterfly, etc.; (c) angular, familiar objects, such as a church, a table, etc.

The time for each of the three periods, the total time for the experiment and the time, in seconds, for acceptance or rejection of each suggestion were clocked and recorded. Using exactly the same procedure, the three pictures were presented separately at intervals of one week.

Stern likewise effected a more elaborate scheme for evaluation of the protocol, as shown in Table XII, which has been constructed from Stern's instructions.

TABLE XII

STERN SCHEMA FOR EVALUATION OF RESPONSES TO CLOUD PICTURES

<i>Category</i>	<i>Details</i>	<i>Definition</i>
A. Content of Imagination (may be regarded as indices of information acquired in child's reading or school-work)	a. Total number of items	a.
	b. Number of total views	b. Interpretations of the whole picture expressed as per cent of total
	c. Number of instances in which description of items is elaborated in detail	
	d. Number of usual and unusual items	
	e. Number of repetitive responses	e. If two or more undifferentiated responses. Expressed as per cent of total
	f. Number of diverse responses	f. Expressed as per cent of total
	g. Definition of predominant directions of content	g. E.g., fairy tales, geography, fire, atrocities, animals, erotic symbols, etc.

TABLE XII (*Continued*)

<i>Category</i>	<i>Details</i>	<i>Definition</i>
B. Mode of Interpretation	Struve's five categories: a. Enumerative b. Explanatory c. Intuitive d. Inventive-unregulated e. Inventive-regulated	Frequently mixed-forms — i.e., two categories interwoven
C. The Drawing Task	a. Reality-boundedness b. Form-boundedness c. Memory d. Perseveration versus flexibility.	a. Degree of correspondence between outline and "real" object it represents b. Correspondence between outlines drawn and forms in picture c. Facility in rediscovery of items—number of times necessary to prompt d. Number of times, if any, a child gave two or more imaginative interpretations for a single region
D. Suggestions	a. Positive versus negative suggestibility b. Sources of suggestibility	a. i. Number of acceptances over number of suggestions ii. Average time for acceptance or rejection b. i. Real belief in existence of items suggested ii. Ambition or rivalry iii. Compliance to experimenter

The usefulness of the procedure was recognized by Stern to depend upon future investigations, none of which seem to have been reported in the literature. Stern predicted that the test would clarify the processes and content of imagination in general, would show the relations of imagination to other mental functions, and would be of symptomatic significance for diagnosis. In practical application of the test, he compared the productions with Rorschach records, finding that the cloud pictures permitted greater freedom in production of content and selection of form. A comparison with a linguistic test of imagination (a modified Masselon test), in which three stimulus words were presented to a subject to be woven into a story, showed that analogous behavior was manifest by most subjects. No clear relationship was demonstrated between the Cloud-Picture Test and intelligence, although a relationship was hypothesized. Finally, Stern claimed that the test proved a new way to approach the problem of suggestibility.

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CHAPTER VIII

THE THEMATIC APPERCEPTION TEST

THE ONLY single technique that has approached the Rorschach Method in quantity and quality of research and use is the Thematic Apperception Test, referred to hereafter as the TAT. It was first mentioned in the literature by its co-authors, Morgan and Murray (42), in 1935. Descriptions of the technique are to be found in many references other than the introductory article, those by Murray (43-48), Kendig (32), Rapaport, Gill, and Schafer (56), Rosenzweig, Bundas, Lumry, and Davidson (65), White (87) and White and Sanford (88) being good examples.

The TAT is a method for the stimulation, recording, and analysis of fantasy. It is based on the theory that in the constructing of stories around ambiguous picture stimuli the individual organizes material from his own personal experiences, partly the immediate perceptions of the stimuli and partly the associations to those perceptions selected from conscious and preconscious imagery. In achieving these fantasies the conscious and unconscious impulses, the defenses, and the conflicts of the individual are expressed, permitting the skilled interpreter to discover the content of such characteristics of the personality and to make certain assumptions about the development and the structure of the personality.

The test materials have been standardized and published, although at least three earlier sets have been identified. They consist of pictures taken mostly from magazine illustrations but including some paintings and drawings from other art sources. The standard set contains 30 pictures, 10 of which are to be used with both men and women, 10 with men alone, and 10 with women alone. A brief description of the pictures is quoted from

Murray (48).¹ For professional reasons, the pictures themselves are not reproduced.

Pictures of First Series:

1. A young boy is contemplating a violin which rests on a table in front of him.
2. Country scene: in the foreground is a young woman with books in her hand; in the background a man is working in the fields and an older woman is looking on.
- 3 BM. On the floor against a couch is the huddled form of a boy with his head bowed on his right arm. Beside him on the floor is a revolver.
- 3 GF. A young woman is standing with downcast head, her face covered with her right hand. Her left arm is stretched forward against a wooden door.
4. A woman is clutching the shoulders of a man whose face and body are averted as if he were trying to pull away from her.
5. A middle-aged woman is standing on the threshold of a half-opened door looking into a room.
- 6 BM. A short elderly woman stands with her back turned to a tall young man. The latter is looking downward with a perplexed expression.
- 6 GF. A young woman sitting on the edge of a sofa looks back over her shoulder at an older man with a pipe in his mouth who seems to be addressing her.
- 7 BM. A gray-haired man is looking at a younger man who is sullenly staring into space.
- 7 GF. An older woman is sitting on a sofa close beside a girl, speaking or reading to her. The girl, who holds a doll in her lap, is looking away.
- 8 BM. An adolescent boy looks straight out of the picture. The barrel of a rifle is visible at one side, and in the background is the dim scene of a surgical operation, like a reverie-image.
- 8 GF. A young woman sits with her chin in her hand looking off into space.
- 9 BM. Four men in overalls are lying on the grass taking it easy.
- 9 GF. A young woman with a magazine and a purse in her hand looks from behind a tree at another young woman in a party dress running along a beach.
10. A young woman's head against a man's shoulder.

¹ Reprinted by permission of the publishers from Henry A. Murray, *Thematic Apperception Test Manual*, Cambridge, Mass.: Harvard University Press, 1943.

Pictures of Second Series:

11. A road skirting a deep chasm between high cliffs. On the road in the distance are obscure figures. Protruding from the rocky wall on one side is the long head and neck of a dragon.
- 12 M. A young man is lying on a couch with his eyes closed. Leaning over him is the gaunt form of an elderly man, his hand stretched out above the face of the reclining figure.
- 12 F. The portrait of a young woman. A weird old woman with a shawl over her head is grimacing in the background.
- 12 BG. A rowboat is drawn up on the bank of a woodland stream. There are no human figures in the picture.
13. MF. A young man is standing with downcast head buried in his arm. Behind him is the figure of a woman lying in bed.
- 13 B. A little boy is sitting on the doorstep of a log cabin.
- 13 G. A little girl is climbing a winding flight of stairs.
14. The silhouette of a man (or woman) against a bright window. The rest of the picture is totally black.
15. A gaunt man with clenched hands is standing among gravestones.
16. Blank card.
- 17 BM. A naked man is clinging to a rope. He is in the act of climbing up or down.
- 17 GF. A bridge over water. A female figure leans over the railing. In the background are tall buildings and small figures of men.
- 18 BM. A man is clutched from behind by three hands. The figures of his antagonists are invisible.
- 18 GF. A woman has her hands squeezed around the throat of another woman whom she appears to be pushing backwards across the banister of a stairway.
19. A weird picture of cloud formations overhanging a snow-covered cabin in the country.
20. A dimly illumined figure of a man (or woman) in the dead of night leaning against a lamp post.

The instructions to the subject may vary in form with the situation and the subject, but their content is standard. Those used by Rapaport, Gill, and Schafer (56) illustrate the essential elements:

I am going to show you a series of pictures and I want you to make up a story around each one of them. I want you to tell me what the situation is in the picture, what the events were that led up to it, and what the outcome will be, describing the feelings and thoughts of the characters. What I would like you to give is a plot, not an elaborate literary

story. I want to write what you say, as much as possible, verbatim. Therefore, please don't hurry.²

From the earliest use of the TAT it has been customary to prompt the subject if he fails to include some of the required aspects in his stories. Questions such as "What led up to this event?", "How will it turn out?", "How does he feel or what is he thinking?" have been asked. Some investigators have made it a practice to record the reaction time (between presentation of the picture and the beginning of the narrative) and the total time (from handing the card to the subject to the conclusion of the story). Usually not more than one hour is spent in testing, even though the subject has not finished. Murray (48) recommends two sessions for the gathering of data.

In the original use of the TAT an interview with the subject was held a few days after the completion of the test. In the interview the source of the stories was sought by questioning, and free associations to elements of the stories were secured. Rapaport, Gill, and Schafer (56) have routinely used an inquiry of a different form. Immediately after a story, or after the conclusion of the whole series, depending on the circumstances in the individual case, they have inquired into any lack of clarity, of which they note three types, perceptual unclarity, verbal unclarity, and unclarity of story meaning. Rotter (69) has emphasized the necessity of postponing inquiry until all the pictures have been completed. Christenson (12) obtained ratings of affect for the pictures (like, feel neutral, or dislike) in his inquiry, and modified the administration of the test itself by asking, "What is this picture about?" and, optionally, "What do you think is most important about this picture?" Lasaga y Travieso and Martinez-Arango (35) inquired into the ideas which had been advanced by the subject and then rejected, and used a questionnaire to provide essential data for the interpretation. This inquiry took place in a third session, the first two sessions having been spent in the collection of the responses. Murray (48) has emphasized

² D. Rapaport, M. Gill, and R. Schafer, *Diagnostic psychological testing: the theory, statistical evaluation, and diagnostic application of a battery of tests*, Vol. 2 (Chicago: Year Book Pubs., 1946), p. 403. By permission.

the importance of knowing such facts about the subject as his age, sex, vocation, and family constellation.

Murray has described the attributes of fantasy as being 10 in number (45):

1. It is fanciful, i.e. it departs from reality.
2. It is dramatic: it has emotional value and it contains a dramatic theme.
3. It is anthropocentric: its image center is upon the characteristics and behavior of human beings.
4. It is egocentric, i.e. the chief actor (the hero) is usually the subject, either directly or indirectly through the process of identification.
5. The actors are driven by "needs."
6. The fantasy has the effect of fulfilling these needs.
7. The story is constructed of pictorial images.
8. It is detached from exigency—it rarely attempts to solve a practical or theoretical problem.
9. It is autonomous, a free response, characterized by a lack of effort.
10. It has the quality of subjective verisimilitude, a feeling of "reality" to the individual.

These attributes have provided Murray with the major characteristics of his interpretative method. He has examined the stories produced for five elements:

1. the *hero*, on the assumption that this figure represents the attitudes, motives, and emotions of the subject, as well as his habitual ways of acting. While not every story introduces a hero, almost every one contains a character who may be recognized as identified with the subject. Other stories contain more than one hero, revealing that the subject has identified himself with more than one person in the pictures;

2. the needs of the *hero*. In accord with Murray's concept of the personality he has developed the following list of *needs*, symbol *n* (46):

I. *Primary* (viscerogenic) needs:

1. *n Air*—
 - a. *n Inspiration*;
 - b. *n Expiration*;
2. *n Water*;

3. *n Food*;
4. *n Sex*;
5. *n Lactation*;
6. *n Urination*;
7. *n Defecation*;
8. *n Harmavoidance* (avoidance of physical pain);
9. *n Noxavoidance* (avoidance of noxious substances);
10. *n Heatavoidance*;
11. *n Coldavoidance*;
12. *n Sentience* (sensuous gratification).

II. Secondary (psychogenic) needs;

1. Actions associated with inanimate objects:
 - a. *n Acquisition* (Acquisitive attitude);
 - b. *n Conservance* (Conserving attitude);
 - c. *n Order* (Orderly attitude);
 - d. *n Retention* (Retentive attitude);
 - e. *n Construction* (Constructive attitude);
2. Actions expressing ambition, will-to-power, desire for accomplishment and prestige:
 - a. *n Superiority* (Ambitious attitude);
 - b. *n Achievement* (Achievant attitude);
 - c. *n Recognition* (Self-forwarding attitude);
 - d. *n Exhibition* (Exhibitionistic attitude), combined with *n Recognition* in *Explorations in Personality*, and the opposite of *n Seclusion*.
3. Desires and actions which defend the status or avoid humiliation:
 - a. *n Inviolacy* (Inviolable attitude), divided into three needs:
 - i. *n Infavoidance* (Infavoidant attitude), to prevent humiliation;
 - ii. *n Defendance* (Defensive attitude);
 - iii. *n Counteraction* (Counteractive attitude), need to redeem the self after failure, etc.;
4. Needs having to do with human power exerted, resisted, or yielded to:
 - a. *n Dominance* (Dominative attitude);
 - b. *n Deference* (Deferent attitude);
 - c. *n Similance* (Suggestible attitude);
 - d. *n Autonomy* (Autonomous attitude);
 - e. *n Contrariance* (Contrariant attitude);
5. Sado-masochistic needs:
 - a. *n Aggression* (Aggressive attitude);
 - b. *n Abasement* (Abasive attitude);
6. *n Blamavoidance* (Blamavoidance attitude);

7. Needs regarding affection between people:
 - a. *n Affiliation* (Affiliative attitude);
 - b. *n Rejection* (Rejective attitude);
 - c. *n Nurturance* (Nurturant attitude);
 - d. *n Succorance* (Succorant attitude);
8. *n Play* (Playful attitude), included in list with some hesitation;
9. Need to ask and to tell:
 - a. *n Cognizance* (Inquiring attitude);
 - b. *n Exposition* (Expositive attitude);
10. Needs associated with energy:
 - a. *n Activity*;
 - b. *n Passivity*.

Within the content of the fantasy various needs of the hero, or heroes, may be made evident. Listing of these needs of the central figure, or figures, is the second step in analysis. The needs revealed are assumed to be externalizations of needs present in the personality of the narrator;

3. the *press*, or the forces which may harm or benefit an individual. These also are listed as they appear in the external forces impinging upon the "hero." As with needs, these are assumed to be projections of the press that are affecting, or have affected, or may affect (pressive apperception) the individual. Murray lists the following press, as culled from the autobiographies of his college student subjects (46, p. 291)

1. *p Family Insupport*;
2. *p Danger or Misfortune*;
3. *p Lack or Loss*;
4. *p Retention, Withholding Objects*;
5. *p Rejection, Unconcern and Scorn*;
6. *p Rival, Competing Contemporary*;
7. *p Birth of Sibling*;
8. *p Aggression*;
9. *Fp Aggression-Dominance, Punishment* (Fusion press);
10. *p Dominance, Coercion and Prohibition*;
11. *Fp Dominance-Nurturance*;
12. *p Nurturance, Indulgence*;
13. *p Succorance, Demands for Tenderness*;
14. *p Deference, Praise, Recognition*;
15. *p Affiliation, Friendships*;
16. *p Sex*;
17. *p Deception or Betrayal*;

Intraorganic Press:

18. *p* *Illness*;

19. *p* *Operation*;

20. *p* *Inferiority*.

Subheadings of the various press have been omitted from the above list;

4. the *thema*, defined as "the dynamical structure of a simple episode, a single creature-environmental interaction," "a particular press-need combination." Such simple thema may succeed one another in an organized sequence to form a complex thema. Thema may be likened to the plots of the story.

5. the *outcome*. In the original study of the TAT (46), a scale was constructed from -2 (very unpleasant ending: frustration, failure, death) to +2 (very pleasant: success and happiness). Murray obtained an "Optimism Index" by summing algebraically the ratings on "endings" and dividing by the number of stories.

In addition to this more precise analysis, Morgan and Murray (42) suggested and used depth interpretations which they compared with psychoanalytic interpretations of dreams, finding a close relationship between the two.

There has been considerable reluctance on the part of many investigators to the using of Murray's analytic methods in detail. Some have not subscribed to the theoretical constructs upon which they are based and have rejected them on that basis; on the other hand, some experimenters have found them unwieldy because of their complexity; some have felt that they produce an oversimplified picture of the personality and fail to represent some of the complexes of the subject; others have objected to the scheme on the basis of the semantic difficulties involved in the specialized vocabulary. Several workers have used the Murray method of analysis, however (Bellak, 8, 9, Deabler, 17, Jaques, 30, Kendig, 32, Klein, 33, Sanford, 71, 72, 73, and Wells, 84).

Sanford (72, 73) has made the most strict application of this method, in the Harvard *Growth Study of School Children*. The extensiveness of this study cannot be indicated here, although some of its features may be outlined. With minor exceptions,

Sanford used the same list of needs as that developed by Murray (Sanford included: *n Blamescape*, *n Excitance*, *n Knowledge*, and left out *n Conservance*, *n Superiority*, *n Similance*, *n Contrariance*, and some of the viscerogenic needs). He also used a list of general traits or attributes developed by Murray: 1. anxiety; 2. creativity; 3. conjunctivity-disjunctivity; 4. emotionality-placidity; 5. endurance-transience; 6. endocathection-exocathection; 7. impulsion-deliberation; 8. intensity-apathy; 9. intraception-extraception; 10. projectivity-objectivity; 11. sameness-change. The TAT formed part of his observational method. He analyzed every phase of the narratives for the occurrence of needs, press, and other attributes.

Sanford discovered 20 syndromes of needs and traits which, while not mutually exclusive, proved to be useful constructs for comparing interrelations between the personality, physical factors of the organism, and environmental conditions. They were made up of needs and attributes which correlated above $+ .30$, in some instances above $+ .40$, and in one case above $+ .50$. By ranking the 48 subjects on each of these syndromes, selecting those 12 cases in which the scores were high and those 12 in which they were low, Sanford was able to discover facts about the behavior correlates of these patterns. For example, two syndromes, Conscientious Effort (*n Blamavoidance*, *n Order*, *Deliberation*, *Conjunctivity*, *Endurance*, *n Achievement*, *n Counteraction*, and *n Understanding* or *n Construction* — average r between each pair of two variables = $.58$), and Orderly Production (*Creativity*, *Endurance*, *n Counteraction*, *n Order*, *n Construction* — average r = $.52$), although not highly related to Mental Age ($.12$ and $.16$), were highly correlated with school grades ($.67$ and $.70$ respectively). They also correlated significantly ($.41$ and $.40$ respectively) with Coordination (a syndrome made up of Coordination, Flexibility, Balance, Large Muscle Movements, Small Muscle Movements, Grace, and Few Extraneous Movements). By hypothesis, he related the personality syndromes observed to the ego and superego development of the individual. In the case of the relationships between Conscientious Effort, Orderly Production, and Coordination, he concluded that the same inner structure which promotes the former two—a superego

that is well integrated with a strong ego—likewise promotes good physical coordination, or, that good physical coordination might be a factor leading to the development of a strong ego.

A simplified adaptation of analysis of each word for indications of specific needs is found in the experiment of Bellak (8, 9). He used 10 pictures of the TAT with 7 subjects. The first 3 subjects were presented pictures 6–10 first and then 1–5; the remaining 4 subjects were given the pictures in the 1–10 order. In each case, after the fifth picture, uniform, sharp criticism of the stories produced was made by the experimenter. It was assumed that the resentment produced would reflect itself in an increase of aggressive content in the stories. The hypothesis was borne out by the significant (1 per cent and 2 per cent level) difference between the frequency of verbs and nouns connoting aggression in the first five and second five stories.

The psychoanalytic method of interpretation, by which the fantasies, including those based upon stereotypes, such as movies and reading, are interpreted as manifesting latent tendencies of the individual, was regarded by Masserman and Balken (39) as the most significant way the stories might be evaluated. It was used also by Meadow (40) in a study of the Japanese personality. Masserman and Balken suggested other methods of interpretation, however, through the use of objective criteria and through measurement of the physiological accompaniments to the projection (skin resistance, blood pressure, electro-encephalographic and respiratory measurements). Among the objective criteria that might be used they listed:

1. misinterpretation of the sex of the figures in the pictures;
2. insistence upon giving proper names to the characters;
3. the success or frustration of the hero;
4. the placing of characters in family situations;
5. the occurrence of suicide, homicide, illicit love relations, rape, seduction, or homosexual erotism;
6. denial that the story applied to the patient;
7. conclusion of the story with an expressed moral;
8. types of expression and parts of speech used.

The last-mentioned, formal analysis by means of study of the speech in the fantasies, was developed by Balken and Masser-

man (4). Their intensive outline of analyzable speech characteristics was:

1. Average number of words per phantasy;
2. Number of predicative, participial and attributive adjectives;
3. Relative number of active, passive and intransitive verbs;
4. The relative frequency of:
 - (A.) "Pro" statements, subdivided into:
 - a. possibility;
 - b. probability;
 - c. certainty;
 as contrasted with:
 - (B.) "Con" statements:
 - d. impossibility;
 - e. improbability;
 - f. uncertainty;
 - g. qualifications;
5. Incidence of expression of conative alternatives, equivalences or vacillations;
6. "Zwang" expressions, either felt as "I have to," "I must," or projected as "He is forced";
7. Number of questions asked of the examiner during the test;
8. Special expressions such as:
 - a. vagueness—"sort of";
 - b. reasoning—"because";
 - c. derivation—"as a result";
 - d. means—"this is how";
 - e. special interjection—"well";
9. Number of occurrences of:
 - a. first person pronouns;
 - b. direct reference to narrator—"it seems to me," "the way I see it";
10. Identification of a character in the phantasy with the narrator: "This might be I," etc.

Some of these items were combined to produce four indices:

1. Verb-adjective quotient = $\frac{\text{Total number of verbs}}{\text{Total number of adjectives}}$
2. Pro-con quotient = $\frac{\text{Expressions of possibility and probability}}{\text{Expressions of impossibility and improbability}}$
3. Certainty-uncertainty quotient = $\frac{\text{Expressions of certainty}}{\text{Expressions of uncertainty}}$
4. Qualification-certainty quotient = $\frac{\text{Expressions of qualification}}{\text{Expressions of certainty}}$

Other criteria of speech were rejected. Among them were:

1. Classification of phantasy as narrative, essay or description;
2. Number of separate ideas or elements in production;
3. Frequency of repetition of thoughts, phrase patterns, plot or other configurations as a measure of "perseveration";
4. Use of metaphors, metonymy, or synecdoche;
5. Differentiation of concrete or abstract statements;
6. Scoring voice, gesture, and facial expressions.

Illustrations of the application of such formal analysis will be postponed until later.

The methods of interpretation used by Harrison (24, 25) and Rotter (68, 69) typify the most common methods (cf. Wyatt, 90, 91; Leitch and Schafer, 36). Rotter (69) secured first some basic data about the subject and his family. About the subject he inquired his age, education, occupation, religion, marital status; number, age, and sex of children, if any; and severe physical handicaps. About the parents, he discovered their age, religion, whether they were living together or not, and, if separated, the date of separation; if dead, the age of the subject at the time of death; socioeconomic status and place of residence at the time of the subject's childhood. With regard to the siblings, he asked their age, sex, handicaps, and marital status.

Secondly, he read through the stories as a whole to gain a general impression of their content and of the identifications of the subject. The identifications were revealed by several principles:

- a. that the subject is likely to identify with a figure of the same sex and age as the subject, or with a figure representing a previous age of the subject;
- b. that the central character in the story is the one with whom the subject most commonly identifies;
- c. that the identified figure is one who does not have behavior unacceptable in the subject's eyes;
- d. that the subject is identifying when he is emotionally involved; and
- e. that the identified figure has a history similar to the subject's own.

The next step was in distinguishing contentual and structural characteristics of the stories. The content was determined chiefly

from the unusualness and frequency of ideas and events. Unusualness is shown in the elements that are unexpected from other stories of the same individual or from the stories around the same picture by other people. (Rotter emphasizes the necessity of building up norms for the ideas and themes called forth by individual pictures. Such norms are only in the process of being developed.) Unusualness is also shown in the interjection of unusual ideas into a common theme or in stories marked by vividness of description or emphatic emotionality. The structural aspects refer to the predominant emotional tones (happy, humorous, unhappy, neutral) of the stories apart from the endings; the endings themselves which may be realistic, i.e., expected from the tone of the story, or unrealistic; the concern of the subject with detail; the logicalness and coherence of the stories, and the number of improbable interpretations. The illogical story may contain direct contradictions, such as in changing the age or sex of the character without explanation; it may also include absurdities, loose associational thinking, or reifications of the characters in the picture, as by giving them proper names.

The next process is interpreting the meaning of the stories as a whole unit, whether they are wish fulfilling, autobiographical, or superficial. Wishes are frequently revealed in the endings of stories, especially where a choice has been made between two or more possible conclusions. Superficial stories are often clichés, chosen from movie plots or narratives in literature. Harrison (25), whose method of analysis is similar to that of Rotter, customarily rejects stereotypes in diagnosis.

The final step in the interpretation is organization of the information obtained. The report form used by Rotter includes the familial attitudes, the social and sexual attitudes, the general attitudes, a description of character traits, and a summary including etiological implications.

The interpretations of the TAT by Rapaport, Gill, and Schafer (56) approximated those of Rotter in general outline. Like him, they analyzed the formal characteristics of the stories. Their interpretation in this phase was in terms of (a) the compliance of the subject with the instructions, and (b) the intra-individual and inter-individual consistency of the stories. While they rec-

ognized the value of speech in formal analysis, they have not, as yet, presented findings on this aspect of interpretation.

Several forms of non-compliance with the instructions have been defined in their experiments:

1. Deviations from making up a plot:
 - a. stories in which the essential facets of the picture do not stand at the center of the plot;
 - b. considering the cards as "paintings," "models, sitting for an artist," "a theater scene," "a dream," "a phantasy," "a nightmare," when these lead to circumstantial description of the pictures or their origin, or to the recounting of a well-known story;
 - c. the subject's omitting aspects of the stories which he was instructed to include—events leading up to the picture, the situation of the picture, the thoughts and feelings of the figures, and the outcome;
 - d. superficial compliance without production of ideational content except under the pressure of inquiry;
 - e. miscellaneous deviations: connecting the various pictures into a "continued" story, introducing self-references and personal experiences, or making up stories of the "once upon a time" type.
- . Perceptual omissions and distortions:
 - a. omission or misinterpretation of an aspect of the pictures;
 - b. displacement of emphasis from an essential to a non-essential part of the picture;
 - c. dwelling upon the picture itself rather than upon the situation in the picture, and,
 - d. introduction of unnecessary elements not found in the picture.

The consistency of the stories is measured in terms of:

1. Their inter-individual consistency, referring to the "perceptual non-compliance"; the length and timing of the stories; the variations from stereotyped stories; the looseness of language expression; using the first person singular or plural, names, memories of actual life events, and dates. Judgments of inter-individual consistency must be based upon norms, which reflect what is to be expected in the stories. Rapaport, Gill, and Schafer have published a list of expected responses to the pictures (56, p. 421-422) and of common perceptual distortions (56, p. 406-407) based upon their experiences with the test.

2. Their intra-individual consistency, evidenced in timing, length, omissions, stereotypes, language and delivery in response to individual pictures, as contrasted with these aspects in the total performance.

Rapaport, Gill, and Schafer have based their interpretations, also, upon the content of the stories. They warn the examiner that, for adequate interpretation of content, a thorough understanding of the psychodynamics of personality is essential in view of the complexity of the processes that produce a fantasy. Thus, the stories may reflect the conscious experience or strivings of the subject, his unconscious motivations, reversals of conscious fantasy, or defenses against unconscious strivings. The method of content analysis used by these authors parallels Rotter's analysis rather closely. They examine (a) the prevailing tone of the narrative, i.e., the generalized sentiments, moods, and attitudes shown in the stories; (b) the figures of the story—both those with whom the subject has identified and those prominent in his "life-space" (e.g., parental, sibling, spouse, or friend figures); (c) strivings and attitudes, chiefly of the identified figure; and (d) obstacles or barriers (both internal and external) which prevent the strivings from leading to satisfaction.

THE VALIDITY AND RELIABILITY OF THE TAT

To determine the validity and reliability of a technique such as the TAT introduces problems similar to those found in evaluating many other projective techniques. Balken (3) points out some of the difficulties involved in determining the reliability and validity of the TAT. The split-half method cannot be applied in reliability studies because of the variability of the fantasies produced in terms of their style, content, and amount. Repetition of the test is unsuitable because of its sensitivity to changes in the subject's life. Validity, on the other hand, is of a complex order, depending upon the definition and formulation of the problem. Thus, if only a few ratings or a few quotients are used in a validity study, injustice is done to the available material; on the other hand, if all the variables in the responses are used

for validation, the current statistical techniques are, to a large extent, inapplicable.

In spite of the difficulties, there have been attempts at validation. The earliest of these were through comparing the results obtained from the technique with information secured through other devices including interviews, tests, autobiographies, and other projective devices. This was the method followed by Murray (46). Although his results were not submitted to statistical treatment, he summarized the report on this method by saying:

The experimenters came to regard this test as the one which could be most certainly relied upon to supply the necessary clues for the divination of the unity thema. (46, p. 545).

Morgan and Murray (42) illustrated this same method of validation by discovering identities between insights obtained through depth interpretations of the test responses and material obtained through psychoanalytic observation.

Sarason (75) also used this method. He illustrated the similarity between dreams and thematic stories in 3 cases of mentally deficient girls, and reported an extension of this study to include 25 subjects with average I.Q.'s of 69. While not in every case were all the major themes in the TAT found in the dreams, Sarason concluded that in no case were the data from any one subject at complete variance. Thus he felt the validity of the thematic interpretations in his group was demonstrated.

The matching method has been the most used in determining validity. This was the procedure of two experiments by Harrison (24). In the first he gave the test to 40 subjects about whose background nothing was known and who were chosen for the experiment by others. He wrote out any information about the subjects which could be inferred from the stories. Since he was attempting to validate the test under ordinary clinical conditions, he felt it unnecessary to eliminate cues from the subject's behavior during the test situation. An associate checked the TAT reports with available case history material, using a formula for indicating

the percentage of correct matchings, $\frac{\text{right}}{\text{right} + \text{wrong}} \times 100$.

In order to reduce chance factors in the experiment, two control groups were used. With the first control group (15 cases of one sex) the TAT was administered and the write-ups were matched with a random selection of cases. With the second group (10 cases of one sex), the "blind-guessing" group, a write-up was guessed without administering any tests and the artificial report was matched with the actual case histories of these individuals. These control experiments confirmed the fact that more than chance success in matching was involved with the experimental group. The mean validity index for the experimental group was 82.5 per cent. Comparison of estimates of intelligence from the TAT with Binet scores for 37 of the cases produced a correlation of $+0.78$. Diagnoses made on the basis of the tests were correct in 30 out of 39 cases (76.9 per cent) when the major clinical category was considered. With 12 out of 18 cases where a clinical subtype was involved, the diagnoses were accurate (66.7 per cent).

Harrison continued this experiment by checking on the validity and productivity of the TAT in personality and biographical types of information. Hypotheses concerning the dynamic and etiological factors in the case, although there were few checkable items of this nature, tended to have a slightly higher validity than the test as a whole. Another important conclusion from this first experiment was that a shortened test using 15 pictures instead of 20 was as valid and practically as productive as the whole set.

The second experiment designed by Harrison was more rigorous. Fifteen patients were given the test by someone other than the experimenter. Interpreting the records "blind" and matching the data with case history material produced the following results: 1. Biographical and personality information could be deduced from the stories of mentally ill patients with a fairly high degree of validity. Behavior cues, however, appeared to facilitate the securing of such information. 2. Psychiatric diagnoses could be deduced with fair accuracy; intelligence, with a reasonably high accuracy. 3. Intra-test comparisons revealed no striking differences in the validity for personality and biographical types of information. The latter appeared to have been produced more frequently, a finding which may, or may not, be significant. As

in the first experiment, hypotheses concerning the dynamic and etiological factors tended to have a slightly higher validity than the test as a whole.

The matching method was also used by Slutz (82). In a statistically controlled study, he found that a group of staff members, who had observed his subjects in their homes, at play, or in psychiatric interviews, were able to identify the subjects from their TAT records. He reported, also, that the tests revealed certain new material of probable significance to the cases.

The third method of determining validity has been in the demonstration of statistically significant variations in the responses of various diagnostic groups to the test. In this, the studies of Balken and Masserman (4, 38, 39) and Rapaport, Gill, and Schafer (56) are the most important and will be described later, when applications of the test are discussed.

The fourth method is prediction, used, as yet, in only minor ways. The experiment of Bellak (8, 9), previously mentioned (cf. p. 216), illustrates one phase of prediction. He was able, as a result of controlling the test administration (sharp criticism), to predict aspects of the responses (increase in aggression). The other demonstration of prediction was in the study of hypnotizability by White (85, 86). From the TAT stories of 15 subjects he attempted to predict their hypnotizability. A rank order correlation of $+0.72$ was secured between the predictions and the rank order of hypnotizability established in later experimentation.

The experimental evidence for the reliability of the TAT is slight, but sound. Two studies have dealt with the reliability of the responses to the test. Slutz (82) used the TAT and a somewhat similar set of 10 pictures to compare the responses of subjects to each. He found that very similar material was produced in each test. Tomkins (83) repeated the test to establish its reliability. The merit of his study was in its intensiveness rather than in its extensiveness. He used a single subject. Each day, 5 days a week, over a period of 10 months, he presented this subject with a single picture, asking for a written story about it. During this process the TAT was administered three times at intervals of three months. Following the third administration, a fourth was given while the subject was under the influence of

alcohol. Likewise, the subject reported all dreams during the 10-month period.

The results of this experiment were of practical importance. The main themes produced in the whole period appeared in the first 30 stories. In spite of the subject's attempts to make the stories different on the successive TAT's, the main themes were repeated in each. In certain instances each of the four stories to single pictures brought out common problems, but with different solutions. The stories under alcohol related themselves to the previous stories in much the same manner as associations to dreams. The daily stories appeared to be independent of the conscious moods of the subject. As an illustration, during a two-week period when the subject reported he was in a state of euphoria, the pleasantly toned pictures elicited very grim stories. Some fantasies which did not appear in any of the original 30 stories or under the influence of alcohol were called forth by the daily administration of the pictures. Both positive and negative transference to the examiner was shown, but Tomkins regarded the relative constancy of the fantasies as being the result of an absence of any interpretation of their meaning to the subject.

Three studies have been made of the reliability of interpretations of the test. Slutz (82) found good agreement between the analyses by two judges. Harrison and Rotter (26), using 5 pictures in a group administration of the test to 70 subjects at the Armored Officers' Candidate School, Fort Knox, each rated the responses "blindly" for emotional maturity and stability. The subjects were rated twice on a 3-point scale (+, ?, -) and once on a 5-point scale (+ +, +, ?, -, - -). With the shorter scale there was complete agreement in 64 per cent of the ratings, partial agreement in 30 per cent and complete disagreement in 6 per cent, yielding a contingency coefficient of .73. On the longer scale complete agreement was registered in 43 per cent, complete disagreement in 0 per cent, essential concurrence (not more than one point's divergence) in 74 per cent. These latter ratings produced a corrected contingency coefficient of .77.

In his reliability study Combs (15) used a "Desires List" by which he and another judge evaluated the responses to the test and autobiographical material. Making separate analyses, the

two judges reached only fair agreement (60 per cent for the TAT, 48 per cent for autobiographies). Combs repeated his own ratings after several months, securing 68 per cent agreement with his previous ratings for the TAT and 63 per cent for the autobiographies. Independent judgments of the accuracy of the analyst's responses, without any explanations by him, was fairly high (86 per cent for both the TAT and autobiographies). When the analyst was given an opportunity to explain his choice of response, these judgments of accuracy rose to 91 per cent for the TAT and 96 per cent for the autobiographies, indicating that it is possible for an analyst to be essentially correct, even though his scoring does not agree closely with that of others. Combs justified this on the basis of seven reasons for the low congruities: 1. the character of the field of investigation; 2. the non-discrete character of the "Desires List" used as a guide; 3. the semantic difficulties involved; 4. the mind-set of the analyst in approaching the scoring; 5. the differences in depth of interpretation; 6. the differences in aspects of a record to which a score is given; and 7. the knowledge of previous material about the subjects (in the case of ratings of autobiographies).

Only a beginning has been made in establishing the validity and reliability of the TAT. To a marked extent clinicians have been willing to accept the procedure as valid and reliable without further scientific evidence than their own experience, which, to be sure, is a form of measurement. It appears likely that one of the trends of future experimentation with this comparatively new method will be in the direction of validation and the measurement of reliability.

APPLICATIONS OF THE TAT

The applications of the TAT may be separated into four major groups. The first of these, representing the earliest and a continued use of the test, is with normal groups. Besides the initial use of the test with college students, which was first reported by Morgan and Murray (42, 46), later by Bellak and Jaques (10), and by White, Tomkins, and Alper (89) in a series of excellent case studies, Deabler (17) and Bettelheim (11) have used it

with college groups. The last introduced the technique of self-interpretation, asking his subjects, 32 women college students, to interpret their own performances. Roe (62, 63, 64) used the TAT and the Rorschach with a group of 20 outstanding American artists in connection with a study of the relationship between alcohol and creative work. Unfortunately, the TAT pictures were commented upon so unfavorably by 18 of the artists that Roe was uncertain whether the responses were more emotional reactions to the cards themselves than projections of the personalities of these individuals.

The second group of applications of the TAT is in its clinical use with mental patients, which will be discussed shortly. The third group is the military use of the technique, which, naturally, corresponds closely with its clinical use. The fourth is the adoption of the technique into anthropological studies.

In the military situation the TAT was most frequently used in hospitals and clinics. Deutscher (19), working in the Mental Hygiene Unit at Drew Field, Fla., found that it proved most useful in indicating the content of emotional conflicts and the kinds of attitudes the patient had to various persons, toward being in the Army, and occasionally toward his own problem. On some occasions the material from the TAT was used as a starting point for extended therapy. Greenwood, Snider, and Senti (23), Jaques, (30), Holzberg (28), Hutt (29), and Garfield (22) have all discussed the usefulness of the method in medical situations. Jaques (30), who reported on the work in a Canadian Army Base Psychiatric Hospital, claimed five practical values: 1. the eliciting of further biographical material; 2. the uncovering of unconscious needs, sentiments and conflicts, not easily obtainable in an interview; 3. the elaboration of parental, sibling, and general social relationships; 4. the arriving at a picture of the psychodynamics of a case at a relatively deep level in an economical and brief period of time; and 5. the uncovering of the dynamics of a case and the helping of a subject to develop insight through indirect use of the stories in psychotherapy. Pennington (52) mentions successful use of the TAT in a Naval disciplinary barracks; Jensen, Rotter, and Harrison (31), discussing the psychologist's function in the armored school, reported that the TAT

and the lie detector proved invaluable in discovering sexual aberrations.

Anthropological studies with the TAT have only recently been initiated. Meadow (40) appears to have been the first to apply the TAT to another culture, the Japanese. Abel (1) in contrasting the responses of 40 Negro and 40 white morons of both sexes found the 20 white females to be more expansive than any others included in the study; the 20 Negro males, to be the most restricted. The girls were freer than the boys in expression of the common fantasy of parental loss and rejection. Henry (27) studied Hopi and Navaho children with a modification of the TAT which will be outlined later.

In the clinical situation, the studies are so numerous that each one cannot be presented in detail. An attempt has been made to present findings relating to the various disorders, in the belief that this scheme will make the respective diagnostic indicators already discovered more readily available to the reader.

Schizophrenia

A. *Verbal productions* (as found in one or more of 75 schizophrenic patients (Balken, 2)):

1. Lack of causal connections;
2. Lack of qualifying and excepting conjunctions;
3. Juxtaposition of items which overtly are apparently unrelated verbally;
4. Diffuseness, scattering or spread of meaning, but evoked by some aspect of the interpersonal situation, such as inadvertent gestures, postural changes, and interpolations of the examiner as well as necessary behavior of the examiner;
5. Fragmentation—sentences without subject or object—verbs or nouns standing alone;
6. Lack of qualifying adjectives and adverbs other than those involving conative or moralistic implications;
7. Ellipses in recognizable trains of thought in which entire members of the sentence are wanting or members of a certain type are preserved, e.g., “of which” at the beginning of every phrase;
8. Absence of similes and analogies and use of inexact substitutions, circumlocutions and neologisms;
9. Poor sentence construction;

10. Equivalence of all evoked responses;
11. Perseveration, blocking, and endless repetitiousness;
12. Interminable silences;
13. Prevalence of temporal setting in the present or present perfect tense, and lack of verbs with future or past reference;
14. Prevalence of verbs in the mode of implying possibility of compulsion, and lack of correlative conjunctions such as "either-or," "neither-nor," "might be—might not be."
15. Lack of identification of characters in terms of age, sex, names, sibling, parental or filial relations; lack of expression of attitudes, or of description of the nature of the interpersonal relations among the characters;
16. Absence of adjectives and nouns denoting imagery in all sensoria, such as color, sound, movement.

Harrison (25) would confirm:

1. Circumstantiality;
2. Neologisms and strange modes of expression;
3. Perseveration;

and would add:

1. Incoherence and confusion and less frequently:
 - a. Punning;
 - b. Dictation of punctuation, paragraphing, and spelling.

Masserman and Balken (38, 39) record the following verbal characteristics in the later stages of schizophrenia:

1. Blockings;
2. Uncompleted sentences;
3. Bizarreness;
4. Perseveration.

B. *Content:*

Harrison (25):

1. Improbable stories (confirmed by Rotter, 68);
2. Absurdities and bizarre elements;
3. Poor originality in interpretation;
4. Ambitendency in story trend;
5. Delusional material in content.

Less frequently:

1. Irrelevant soliloquies;
2. Disruption of obvious relationships in pictures.

Masserman and Balken (38, 39):

1. Impersonal, concrete, literal description; or,

2. Disjointed, highly bizarre stories with little or no connection with the pictures.

Rotter (68):

1. The number of illogical, incoherent responses is the best indicator—the minimum number was three.

Rapaport, Gill, and Schafer (56):

1. Socially unacceptable content such as homosexuality, perversions, or tabooed aggressions (patricide, matricide);
2. Overelaborate symbolism;
3. Withdrawal trends in content;
4. Delusionlike content;
5. Bizarre phantasies—most frequent in preschizophrenics;
6. Peculiar turns in the content, frequently having the appearance of facetious remarks—particularly frequent in preschizophrenics;
7. Disjointedness of organization shading into incoherence;
8. Contradictions;
9. Introduction of contents, settings, or ideas extraneous to pictures;
10. Story-continuations from one picture to another.

C. *Emotional tone:*

Harrison (25):

1. Affectless tone;

Rotter (68):

1. Predominant mood—large number of neutral stories.

Neuroses

I. *Neuroses in general:*

A. *Approach:*

Balken (2):

1. Neurotics are aware of the probing implications—offer autobiographical or biographical experiences of which the picture reminds them;
2. They are aware of the self-revealing implications and often verbalize this awareness;
3. They parry probing and self-implications with many devices for the avoidance of any responsibility in relating ego-alien material;
4. They are desirous of ventilating some non-ego material and utilize the protection of the directions to talk about hostilities, frustrations, desires, jealousies, etc.;

5. They make complimentary or adverse remarks regarding their imaginative ability or regarding compliance with the directions;
6. The fantasies are so self-revealing that the pattern of some of the determinants of neurosis may be reconstructed from them;
7. In the hospital or clinic, the psychoneurotics have heard of the test by the grapevine;
8. They show curiosity about the meaning of participation in the test and its effect on the future course of their interpersonal relations with the psychiatrist, parents, and others.

B. *Content:*

Renaud (58):

1. As contrasted with a head-injury group—no significant differences in needs or press;
2. As contrasted with a brain-disease group—exceed significantly (.05 level) on needs Achievement and Dominance and press Dominance;
3. Middle position in length of stories to picture 11 (road skirting a chasm) between head-injury group (longest) and brain disease (shortest).

II. *Conversion hysteria:*

A. *Approach and verbal factors:*

Balken and Masserman (4):

1. Productions of medium length;
2. Plethora of leisurely descriptive material with little forceful action (low verb-adjective quotient);
3. Little vagueness;
4. Ambivalence or qualification of statements (high pro-con quotient as contrasted with low certainty-uncertainty and qualification-certainty quotients and with low alternative and "special expressions" ratings);
5. Minimum use of first person or of identifications with narrator;
6. Minimum of interpersonal tension in the test situation—freedom in asking questions of the examiner.

B. *Content:*

Masserman and Balken (38, 39):

1. Superficial, and at times almost flippant fantasies, frankly sexual in content; erotic fantasies ending in frustration; hypochondriacal fantasies often included.

C. *Emotional tone:*

Rapaport, Gill, and Schafer (56):

1. Affective lability is outstanding in the records of hysterics, especially females.

III. *Anxiety states:*A. *Approach and verbal factors:*

Balken and Masserman (4):

1. Brief stories;
2. Action is most dramatic and often compulsive (high verb-adjective quotient);
3. Alternatives of conation most frequently sought;
4. Special expressions connoting vagueness, hesitation, and trepidation freely used;
5. Direct identifications of narrator with characters frequent;
6. Substitutions of facial expressions and body gestures for inhibited verbal language often frequent, or else anxiety-cathected questions are asked of examiner.

Masserman and Balken (38, 39)

1. Apologetic for lack of imagination;
2. Defensive and guarded in first few pictures, then soon become freer leading to moving dramatic situations and intense, clear-cut conflicts.

B. *Content*

Masserman and Balken (38, 39)

1. Readily autobiographical;
2. Conflicts made to appear futile and often lead to frustration and tragedy;

IV. *Obsessive-Compulsive Neuroses:*A. *Approach and Language:*

Balken and Masserman (4)

1. Language syndrome somewhat similar to anxiety states, with the characteristic modification that the necessity (highest score on compulsions) the patient feels to rationalize and elaborate the many ambivalences and uncertainties is reflected in his fantasies (highest qualification-certainty quotient);
2. Extensive use of "special expressions";
3. Lowest pro-con and certainty-uncertainty quotients greatly increases average length of productions.

Masserman and Balken (38, 39)

1. Pervading uncertainty—fruitless, querulous indecision.
2. Meticulous detail;
3. "Perhaps," "maybe," "might be half a dozen things" common.

B. Content:

Masserman and Balken (38,39):

1. Frequent reoccurrence of a few clearly related, almost stereotyped fantasies;
2. Marked ambivalence about important emotional conflicts;
3. Phobias when present are included.

Rapaport, Gill, and Schafer (56):

1. Circumstantial descriptions;
2. Peculiar circumstantiality;
3. Fragmentation associated with rigidity and doubting;
4. Intellectualizing—abound in references to controversial, scientific, aesthetic, political, psychological matters;
5. Awareness of own thought processes;
6. Compulsive criticism of the picture;
7. Pedantry, mixed with free-association-like ideas.

Manic

Harrison (25):

1. Hurried pace;
2. Excessive emotionality.

Depressed

Masserman and Balken (38, 39):

Retarded, halting and fragmentary stories; evidences of deep guilt, self-depreciation and nihilism.

Harrison (25):

Number of misfortunes, sad overtones, unhappy endings, exclamations and interjections of dismay; frequently projected guilt feelings of characters.

Rapaport, Gill, and Schafer (56):

1. Great restriction of ideational activity;
2. Gloomy stories and endings;
3. Occasionally wishful fantasies of love, kindness, and happiness to the point of "mushiness";
4. Delusions or perseverations about sin, morality, and sickness;

5. Distorted perceptions of affect such as confounding aggression, guilt, and depression;
6. Occasionally circumstantial descriptions in stories of a "blue mood";
7. Overelaboration or perseveration of the theme of happiness against sadness.

Paranoia

Masserman and Balken (38, 39):

1. Generally evasive and guarded;
2. Suspect purposes of test;
3. Take care to deny that the stories are autobiographical;
4. Occasionally an emotionally charged and highly significant response breaks through.

Rapaport, Gill, and Schafer (56):

1. Themes of suspicion, spying, "sneaking up," attacks from the rear;
2. Deducing the motives of the examiner from the picture;
3. Verbalizing inferences as though "proving" the story;
4. Moralizing (frequent in paranoid schizophrenics);
5. Extreme misrecognitions of the sex of figures;
6. Consistent denial of aggression;
7. A miscellaneous group, such as the presence of stereotyped phrases, like "she soon returns to her normal mind" in every story, or seeing the same person in different cards.

Head-Injury Group

Renaud (58):

1. Significantly less needs Achievement and Dominance and press Dominance than psychoneurotic group;
2. Significantly less needs Achievement and Construction than brain-injury group (.01 level) and needs Autonomy and Dominance and press Dominance (.05 level);
3. Shorter fantasies on picture 11 (road skirting chasm) than psychoneurotics or brain-injury groups.

Psychopathic Defective Criminals

Kutash (34):

1. Most frequent fantasies are indicative of:
 - a. separation anxiety;
 - b. conflicts involving family relationships;
 - c. ambitions;
 - d. guilt feelings and unconscious desire for punishment.

Mentally Defective

Masserman and Balken (38, 39):

1. Naiveté of material;
2. Dearth of imagery;

Sarason (74):

1. Two most common themas—aggression, desire for affection;
2. Two other common themas—rebellion against parents and feelings of guilt;
3. Also manifest feelings of loneliness.

Miscellaneous

I. *Sex-preoccupied:*

Harrison (25):

1. Blocking in reaction to picture 14 (nude man climbing a pole) frequently indicates guilt over masturbation;
2. Calling figure in picture 14 a woman—appears in guilt-ridden male homosexuals;
3. Sexual responses—preoccupation with sex.

II. *Strongly suppressed aggression:*

Rapaport, Gill, and Schafer (56):

In a setting of otherwise orderly stories, sudden and not too elaborate aggressive turns not required by the card.

III. *Delinquent boys:*

Wells (84)

IV. *Stutterers:*

Richardson (59, 60):

1. No significant differences from normal controls in:
 - a. proportion of needs;
 - b. reactions to frustrations, themas, attitudes to environment;
 - c. adequacy of central character;
 - d. satisfactory or unsatisfactory endings;
2. Show greater needs for achievement and affection than beingness, recognition, or sensory gratification;
3. When frustrated, tend to show guilt feelings;
4. Most predominant themas: achievement, abasement, aggression;
5. Environment:
 - a. more thwarting than normals;
 - b. more punishing;
 - c. more dominating.

V. *Case material*, integrating TAT with other tests:

Rosenzweig & Clark (66)

Shakow, Rodnick & Lebeaux (81)

Psychoses in Childhood

Leitch and Schafer (36):

A. *Intellectual sphere*: (*, only in psychotic children)

- *1. Incoherence;
- *2. Contradictions;
- 3. Queer ideas;
- *4. Queer verbalizations;
- 5. Overspecific statements;
- 6. Repetition of a phrase;
- *7. Neologisms and nonsense rhyming;
- *8. Introduction of examiner into story;
- *9. Manneristic speaking;
- *10. Overgeneralizations and symbolic interpretations;
- *11. Autistic logic;
- *12. Themes unrelated to pictures.

B. *Perceptual sphere*:

- 1. Important details omitted;
- 2. Details misrecognized or distorted;
- 3. Unresolved perceptual uncertainties;

C. *Emotional functioning*:

- 1. Frequent references to violence or death.
(In only one psychotic case, simple schizophrenia, was the test inconclusive.)

Des Lauriers and Halpern (18)

A. *Before shock treatment* in childhood schizophrenia:

- 1. Fantasies often unrelated to pictures;
- 2. Choosing of incidental element of pictures;
- 3. Self-reference and autistic thinking.

B. *After shock treatment*:

- 1. Flattening out of affect;
- 2. Fantasy life reduced.

Psychiatric Practice

Masserman and Balken (38, 39)

Values of the Test

1. Frequently of significance as to the state of the patient's transference to the psychiatrist and of his reactions to the treatment situation. Indicated by:
 - a. frank inclusion of the psychiatrist in the stories;
 - b. in positive transference, retest brings forth a great deal of material;
 - c. in negative transference, reduced content;
2. Aid in securing psychiatric history (except in two cases of paranoia where the test caused evasion and defensiveness in several succeeding interviews).
3. Brings into sharp relief the salient features of the case.

Freed and Eccker (20)

Schnack, Shakow, and Lively (80)

By way of conclusion, we find that, in general, the applications of the test reveal the content of the fantasy life, and hence, the modes of gratification, frustration, and adjustment in the personality. Because of the range of fantasy material the TAT may command, it is especially sensitive to a great variety of specific quantitative and qualitative differences between individuals. The specificity of the responses is both an asset and a liability in practice. It prevents simple generalizations, both in analysis and in interpretation of the responses, which, appropriately, deter those who would use the technique without adequate training and psychological insight. It handicaps those who are competent to use the method, however, by introducing such complexities that the standardization of procedure and the comparisons of results between investigators is difficult to achieve. The previous outline of findings in the various clinical groups illustrates this handicap. Does "the plethora of leisurely descriptive material with little forceful action" and the "minimum of interpersonal tension in the test situation," reported by Balken and Masserman as characteristic of the records of hysterics, correspond with the statement of Rapaport, Gill, and Schafer that "affective lability is outstanding in the records of hysterics"? There is no simple answer to such a question. There is no shorthand language by which the definitions and descriptive illustrations necessary to present conclusions from the TAT can be

communicated. If an adequate symbolic representation of responses could be devised, it is unlikely that it would serve the purposes which would be implied in its development. The resultant differentiation of elements would reduce, if not destroy, the impressions from the organized whole of the TAT record. The only present alternatives to a suitable standardized shorthand language are the individual schemes which so bear the marks of their authors that they frequently confuse rather than clarify, or the presentation of excerpts from actual records which inevitably destroy the integrity of the material, or the reproduction of entire records which are so lengthy that intercomparisons become unwieldy. No simple choice can be made amongst these alternatives. The eventual solution of the problem must be some form of compromise, the effectiveness of which will determine to a major extent the increase of the utility of the TAT in the future.

For the bibliography on the TAT see the end of the following chapter, pp. 247-52.

CHAPTER IX

DIRECT MODIFICATIONS OF THE THEMATIC APPERCEPTION TEST

THE MOST common direct modification of the TAT is in shortening the test by reducing the number of stimulus-pictures used. An example is found in the study of Sarason and Rosenzweig (77, 78) in which they applied the findings of White (85, 86) and centered their attention on the reactions to the "hypnosis" picture. They used the results as an index to the hypnotizability of subject, finding statistically significant differences between the responses of the hypnotizable and the non-hypnotizable subject. The verbal and adverbial phrases of the non-hypnotizable were typically extrapunitive, i.e., aggressive reactions to the dominance of external influences, as revealed in expressions of fear, aggression, and suspicion in their responses. The hypnotizable were impunitive, i.e., avoiding the expression of aggression, in that their responses conveyed the attitudes of cooperativeness, conciliation, and acceptance of the presence and success of hypnosis. The non-hypnotizable showed "needs" for autonomy and anxiety; the hypnotizable, for deference, affiliation, and abasement.

The second most common modification of the TAT is in using some of the TAT pictures in combination with other pictures. Balken and Vander Veer (5, 6, 7) and Frenkel-Brunswik and Sanford (21) used this modification for quite diverse purposes. Balken and Vander Veer (5, 6) developed a set of 12 pictures taken from the scrapbooks of children previously under psychiatric treatment, magazine illustrations, articles on child care, and the TAT, avoiding those pictures in the last which suggested death, murder, suicide, or erotic fantasies. The neurotic children to whom the pictures were administered were tested immediately before or after the first psychiatric interview at the Psychiatric

Division of the University of Chicago Clinics. They were told that they were to be given a test of creative imagination, shown the pictures in order, and asked to tell the story illustrated, to elaborate on the characters and situations, and to carry the narrative through to any desired conclusion. No time limit was imposed. Following the interpretative methods previously outlined by Balken (cf. pp. 216-18) the authors found that the test was valuable in eliciting information on the specific instinctual needs of the child: his hostilities; his frustrations, whether internal or external, preventing gratification of his needs and engendering hostility; the degree, and status, of his anxiety, whether latent, overt or significant by its absence; and the nature of his defenses used to ward off conflict.

With their group of 40 subjects ranging in age from 5.5 to 15.0 years and with I.Q.'s from 82 to 150, they found that:

the phantasies are derived largely from the more superficial strata of the psyche and, before gaining access to the ego, have been distorted by mechanisms of displacement, symbolization, and the like. The defenses, though weakened, are not abrogated, and only material which is fairly acceptable to the ego breaks through. We thus do not find, and should not expect to find, direct, undisguised expression of deeply repressed impulses.

Balken and Vander Veer did find, however that material was brought out by their test which was not available in the direct psychiatric examination; they believed this indicated that the subject's attributing of ego-alien impulses to figures outside the self, or true projection, eased the process of communication.

A further study by Balken and Vander Veer (7) with neurotic children led to the following general conclusions about their reactions to the test situation. In the first place, the situations depicted in the pictures appreciably affected the form and content of the stories produced. While rigid criteria by which to evaluate a picture could not be established, it was found that pictures which define a "conflictual situation" too sharply were unprofitable for fantasy development. Secondly, there is a configuration in the sequence of fantasies produced by the various pictures; a whole series of fantasies may be dynamically related.

Fantasies that revealed repressed impulses often were followed by defensive, sterile, evasive, and non-committal responses to the next pictures; on the other hand, dynamic material called forth by one picture may not be expressed until responses to later pictures that are emotionally neutral for the subject. Thirdly, the child usually approaches the test situation with some resistance and, especially the younger child, with awareness of the implications of the test. This may lead to defensiveness, circumvention, or justification of the expression of already censored material, such as enumerations, descriptions, nullifications, omissions, retractions, rationalizations, and further projections. Fourthly, the test situation may induce fatigue by creating tension unrelieved by speech. Fifthly, the interjection of questions and comments about the examiner, the child himself, the psychiatrist, siblings, or parents adds to the evidence of resistance that may be expressed in flattery or expressions of hostility. Finally, the test instructions themselves may be used by some children to defend themselves against consciousness of the personal origin of the impulses expressed in the fantasies. The implication of these findings with reference to resistance to the test situation is the importance of a precautionary removing of defenses by building rapport so that significant material may be revealed.

On the basis of their data, Balken and Vander Veer differentiated some determinants related to serious organic diseases: productions revolving largely around disease, accidents, operations, and hospitals; to strong sexual curiosity: heightening of sexual themes; and to traumatic experiences: except in one instance, complete absence of even indirect allusions to the experiences. With reference to chronological age they found that the younger the child is below 10, the more apt are the fantasies to be of a "forced" type. Those spontaneous responses that appear are likely to be fragmentary enumerations or partial descriptions of some phases of the picture. The defenses are strong and simple, chiefly repression, suppression, or denial. With children in the 10- to 15-year age group, the fantasies approach those of adult neurotics in form and content. A great variety of defenses appears: sublimation along artistic or vocational lines, restitution, atonement, renunciation, reaction-formation and displacement. Like-

wise, the synthesis between imagination and intelligence is more apparent.

Frenkel-Brunswik and Sanford (21) used six TAT pictures combined with four other pictures in their evaluation of personality characteristics associated with anti-Semitism. Twenty women students were chosen as subjects on the basis of their scores on a test of anti-Semitism (8 at each extreme and 4 in the middle range). Among the anti-Semitic students aggressive themes in the fantasies stood out, appearing relatively extreme; causation in the fantasies was externalized or physical; "social anxiety," revealing a conventional type of conscience was common; religion and nationalism were regarded as sources of support that could substitute for personal effort and achievement; an aversion to emotionality appeared, combined with a repression of basic impulses; there was strong evidence of reaction-formation against narcissism and extreme aggression. Attitudes to parental figures were ambivalent, and the possibility of paranoid trends was inferred. The pattern of human relationships was essentially one of dominance-submission and the struggle between the two. Discrepancy between the overt and covert layers of the personality appeared typical.

A group of experimenters at the Worcester State Hospital (61, 70, 81) have developed a modification of the TAT including 5 of the original Murray cards, 6 new ones representing childhood situations and 1 blank card. These pictures have been used experimentally and clinically in two ways: one, administration under ordinary conditions, and the other, under conditions of frustration. To build up the frustration a simple pinball game was used, in which the subject secured a surreptitiously controlled score which induced a sense of failure. Rodnick and Klebanoff (61) compared the responses of the 12 best-adjusted and the 12 least-adjusted at an N.Y.A. Camp after the frustrating game. Statistically significant differences were found between the two groups. The well-adjusted showed a decrease in the number of themas of superiority of the central characters, an increase in themas of aggression, and a decrease in the themas dealing with emotional states; the poorly-adjusted, an increase in "emotional states," and no decrease in the incidence of superiority. A composite score was devel-

oped which differentiated the two groups with a t of 3.4 (p of .001).

Modification in the method of administration was used by Oppenheimer (51) who asked a subject to choose three pictures out of the Murray cards and write stories around them. Writing was found to be advantageous because it resulted in less self-consciousness since no close relationship with an examiner was involved, because the effect of the examiner's personality was reduced to a minimum, and because an untrained person might give the test under this condition. Loebowitz-Lennard and Reissman (37) also experimented with a modification of the TAT. They used eight standard TAT pictures (4, 6BM, 6GF, 7GF, 7BM, 8BM, 13MF, 12F.) Responses to the pictures, each of which was exposed five minutes, were written. At the conclusion of the story writing, the following additional instructions were given: "On the sheet of paper I gave you, please recall as many of the pictures as you can by describing them in one or two sentences. Number them as they come to your mind." After 10 minutes the 25 college students who served as subjects were told to stop. The recall was repeated 3 days later with the same subjects. Two types of recall were observed: subjective (in terms of fantasy) and objective (in terms of the picture). The description in the recall was found to be a condensation of the original fantasy story, a miniature thema. Recall after a 3-day period was found to modify, if at all, away from the subjective descriptions toward the objective. A definite relationship was found between the order of recall and the frequency of recall. Those pictures that were recalled earlier also were more often recalled by the group. It would appear, thus, that there is a difference in the quality of the pictures to activate emotional disturbance or to produce effective defenses against disturbance. The "picture of the older gray-haired woman turned away from a younger man who is looking downwards" (6BM) stood out strikingly from the rest of the pictures by its frequency of recall, its high order in the recall, the high subjective/objective ratio, and the limited range of fantasy produced.

Murray and Stein (50) also reported on a TAT involving writing, which could be administered to groups and was used in the Officers' Candidate School. Pictures were projected on a screen.

Five minutes were allowed for the writing of the stories. Each set of stories was scored according to the strength (intensity and frequency) of eight variables, three of which correlated positively with leadership capacity, and five of which correlated negatively. The positive signs were: need Achievement (ambition manifested in the actions of the hero), need Counter-action (restriving after failure), and need Exposition (amount of telling, explaining, and instructing done by the hero); the negative indications: need Abasive Intragression (self-accusation, guilt feelings, suicide), need Change and Novelty, need Deference (compliance, respect), need Rejection (contempt, scorn, dislike, expressed in the actions of the hero), and Inner Conflict (uncertainty, indecision). The rank order of the subjects in terms of their total scores (sum of positive minus the sum of negative indications) correlated .65 with the rank order of leadership qualifications as judged by superior officers. Five of the TAT pictures proved to be the most successful:

1. the older gray-haired woman turned away from a younger man who is looking downwards (6BM);
2. a young man tearing himself away from a young woman (4);
3. a man with an uplifted hand an open mouth (earlier series);
4. a young man lying on a couch with an older man leaning over (12M);
5. four workmen lying on the grass (9BM).

These same authors described another test related to the TAT in the same article (50). This was for individual or group administration and was based upon a multiple-choice principle. Pictures with which the subject might readily identify were exposed for 1 minute and a choice of 6 answers for each of 2 questions for every picture was presented on scoring sheets. The 12 answers to each picture represented 12 different variables, the checking of which, it was assumed, revealed a slight bias in the direction of the individual's own half-conscious or unconscious tendencies. The multiple choices as written proved to be unsatisfactory for personnel selection and the test seems not to have been developed further.

Clark also constructed a multiple-choice group test based upon 14 of the TAT pictures (13). Three stories for each picture were

chosen from 852 stories collected from subjects in several localities. A scoring key was built up for each story based on needs, the effect of the environment on the organism, the reactions of the organism to the environment, the adequacy of the principal character as shown by the general themes and dominant tones of the stories, and the endings. The scores were recorded on a specially developed tabulation sheet. Clark evaluated the test by administering it to 50 students at the University of Southern California. The results were compared with written stories secured in a group situation. A substantial relationship between the two tests was evident in four out of five categories; this relationship was improved when the clinical form of the test was administered first. The new test did not indicate "needs" as accurately as it did the other categories, and proved most nearly comparable to the clinical test in revealing the "ending" and the "adequacy of the leading character."

Using 10 of the TAT pictures in an extensive application of the test in group situations with written responses, Rautman and Brower (57) put the stories secured to a special research purpose. They gave the test to 536 third- to sixth-grade pupils and 20 teachers, thus securing 5360 stories by pupils and 200 by teachers. Five minutes, approximately, were allowed for the writing of each story. At the end of $4\frac{1}{2}$ minutes, the children were instructed: "Now tell how the story will end." The stories were analyzed for three themas indicating war interpretations—themas of: 1. active warfare, or associated with war; 2. active or passive killing; and 3. death by other means than killing. They were also evaluated on the basis of three types of endings—happy, sad, and neutral or indifferent. One or more of the 10 pictures produced war stories in 38.62 per cent of the group of subjects; two or more brought out such stories in 15.49 per cent; three or more, and four or more of the pictures stimulated war themas in 6.16 per cent and 3.18 per cent, respectively. Trends were observed toward more war stories in boys and in the older grades; no relationship in the number of war themas between the teachers and their classes was demonstrable. Of the total stories, 5.13 per cent had "killing" themas; 6.35 per cent, "death," and 6.47 per cent, war.

The authors found the percentages of the three types of endings to be as follows:

1. neutral—39.98 per cent (29.39 per cent of the war stories were without an emotional ending);
2. sad—24.83 per cent (the war stories showed an increase in sad endings with grade level of the subjects); and
3. happy—35.19 per cent (increasing with the grades).

The significance of these findings with reference to war themes cannot be indicated without securing data from peacetime periods. As a method of acquiring group data on fantasy, however, the group TAT seems to be valuable. Its possibilities for building up normative data for the individual test have not been adequately explored, and would depend upon demonstration of a close relationship between responses on the individual and group forms of the test.

SUMMARY

In summary, the direct modifications of the TAT have been of six types: reducing the number of pictures, combining some TAT pictures with other pictures, administering the test under frustrating conditions, permitting selection of pictures, securing written responses in group situations, and, finally, presenting multiple-choice responses for checking. The first three methods, adaptations for individual administration, have the support of precedent and substantiation by research for their usefulness. The "selection of pictures," as advocated by Oppenheimer, needs more research to demonstrate its value. The writing of responses in a group situation shows promise, especially with intelligent, literate subjects, whereas the multiple-choice tests may not be expected to prove highly serviceable, although such careful development as was applied to the construction of the *Sargent Test of Insight into Human Motives* (cf. pp. 67-71) might produce a technique of comparable utility.

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CHAPTER X

VARIOUS OTHER PICTURE METHODS

THE USE of meaningful pictures as stimuli for personality projection is by no means restricted to the TAT and its variations. Both for children and adults a variety of other picture devices has been advocated, some for general personality diagnosis, and some for specific purposes. This chapter will present some of these other methods. The Szondi Test and the Picture-Frustration Test, which might have been discussed here, since they are based on the same general type of material, will be given separate and lengthier consideration.

One of the earliest records of the use of pictures to study imagination was made by Brittain in 1907 (2). His descriptive experiment was followed the next year by a study of adolescent fantasy by Libby (13). These early experiments were not diagnostic in purpose. The first use of pictures for the investigation of the individual personality was by Schwartz (22), who reported in 1932 on the responses of 40 delinquent boys to his Social Situation Pictures. His stimuli consisted of 8 black and white pictures, each one simplifying and representing a constellation of experiences through which his delinquent group might have passed. The child was given 3 minutes to become familiar with each of the pictures, then asked to describe what he saw and to answer the question, "What is the boy thinking about?" and "What would you think of and what would you do if you were the boy in the picture?" The responses were thought to reflect four aspects of the life of the boys: the imaginative life, responses in terms of bodily pleasure, i.e., pleasurable somatic reactions, responses in terms of adjustive thinking, and the primary emotional experiences such as fear and love. Schwartz divided the responses into two groups, the "usual" and the "unusual." He found the pictures of value in

the psychiatric interview in prompting reactions from the uncommunicative, dull, and distractible delinquent.

Following upon the development of the TAT, many similar techniques for use with children were advanced. Horowicz and Murphy (11) described a number of these, and Murphy, elsewhere (14), said of the use of pictures:

From the point of view of method, the results obtained from the picture experiment indicate that this procedure is one of the most fruitful and economical in the study of children's attitudes and personality. They afford an opportunity to relate phantasy material and attitudes towards the adult in a natural but controlled situation to the behavior of the child with his own age group.

Horowicz (9), using simple pictures including children of different races, asked the children, "Which one is you?" in order to investigate racial attitudes. She later used 12 sets of pictures (10), about which the same question was asked, to reveal identifications of children referring to age, size, sex, familial position or status, economic status, and eating habits. Temple and Amen (26), adopting a technique suggested by Horowicz and Murphy, investigated 25 normal and 25 clinical cases of children. Their materials consisted of a series of 12 pictures, each of which represented a situation familiar to 4- to 6-year-old children. The face of the figure was left blank. Two separate, movable heads, one with a happy and one with a sad or anxious expression, were available for placing in position on the picture. The children liked the activity of putting the faces in their appropriate places. Typical and deviating responses were discovered for each picture, making possible a normative approach to interpretation. Although some pictures proved more useful than others for revealing particular areas of anxiety, a close relationship could be shown between the pattern of anxiety in an individual's responses and his actual behavior adjustment. With the nursery group of normal children, a correlation of $+ .57$ between actual adjustment as indicated by teacher ratings and anxiety as revealed by the test was obtained; with the first-grade group, where the teacher had a large group and had known the children only half a year, the similar correlation was $+ .27$.

Amen, also, had used the principle of movable parts in a previous experiment with pictures (1). This earlier set had contained 15 pictures. The method may be illustrated by a description of the first picture and the manner of using it. It consisted of a

colored background painting of a large table set for a birthday party. At one side of the table are six movable cut-out figures, and on the table are two movable gift-boxes. . . . The examiner remarks: "Let's pretend it's someone's birthday. . . . Whose birthday is it?" After one of the figures has been chosen as having the birthday, the question is asked, "Who will come to the party?" This is followed by the questions, "What will (s)he find in this box?" (pointing to the square box) and "What will (s)he find in this box?" (pointing to the long box.)¹

Three major types of perceptual responses were distinguished by Amen. The first was simple naming, or other identification of objects in static form, or enumeration, predominantly found in the 2-year-olds. In the 3-year-olds, the second type, description of the picture situation in terms of overt activity (such as, "This little girl is eating her breakfast") was fairly common. By 4 years of age "inner activity," or inference as to the psychological states (such as, "A little boy doesn't want to eat and his mama's going to get him to") appeared frequently. All three of these groups were found to misinterpret the content of the pictures. The range of responses was all the way from perception of concrete, often unrelated, details of a situation to a recognition of these concrete details as parts of some larger whole. The "part-whole" balance in perception manifested itself in five ways: 1. a part or detail interpreted as a whole; 2. an unanalyzed, but relatively complete, whole; 3. an incomplete whole, analyzed incompletely; 4. a whole in which some detail is discriminated; and 5. a whole rich in details. Associated with the perception were various degrees of fantasy production. The various age levels showed progressive changes in the identification process, a broadening of social interests, and a progressive structuring of interests, as represented in wishes, toy preferences, and color responses, as age increased.

Both Vernon (27) and Grotjahn (7) have studied the percep-

¹ E. W. Amen, Individual differences in apperceptive reaction: a study of the response of preschool children to pictures, *Genet. Psychol. Monogr.*, 23 (1941), 325-26. By permission.

tual processes involved in children's responses to pictures and the relationship of these cognitive aspects of personality to the fantasy life. Vernon's findings concerning age differences do not correspond closely with those of Amen. This is probably a reflection of the complexity of his pictures. Vernon reported the enumerative tendency to be characteristic of a little child when he is shown a picture and asked "to tell me about it." Vernon found that by the age of about 7 years, the child makes a partial interpretation of the picture involving simple descriptions. After the age of 11 years and beyond, the picture is interpreted as a whole. The fantasy content has a roughly corresponding relationship to the perceptual stages. In the first age group the fantasy invention and construction are incoherent and apparently without meaning. Later more coherent fantasy appears, but is not integrated with the cognition of the stimulus. Finally, a synthesis between the cognition and the fantasy is achieved. Disruptions in these interrelationships may be caused by impairment of the perceptual functions, overactive fantasy life, and a lack of ability to express fantasy.

Investigation of the fantasies of Hopi and Navaho children by Henry (8) was accomplished through 12 line drawings designed and drawn by an Indian artist. Henry described the usefulness of the method in anthropological studies in providing:

1. data on the intellectual and emotional aspects of personality and the emotional significance of life experiences by showing: (a) the intellectual capacities and the characteristics of the individual's mental approach; (b) the creative and imaginative capacities and their utility; (c) the motivational background of overt behavior; (d) the family dynamics and the interpersonal relationships within the family; (e) the inner adjustment and mechanisms of defense; (f) the emotional spontaneity and reactivity; and (g) the sexual adjustment;
2. a picture of the total personality in action rather than a report of discrete parts;
3. information on many aspects of the past and present life experiences important in the development of the individual;
4. data on the general psychological characteristics of society, reflecting (a) the physical world; (b) the adult pressures; (c) the authority systems; (d) the interpersonal relations; (e) the sex roles; (f) the family role; (g) the spontaneity and restraint; (h)

the acculturation process, and (i) the personality characteristics at different age levels.

Such a list of values is a most adequate description, not only of the value of the Henry pictures, but also of the Murray TAT, of its direct modifications, and of the other comparable picture techniques.

A study of fantasy in adolescents, essentially a repetition of the Murray TAT experiments using a different set of stimulus pictures, was accomplished by Symonds (23-25). The selection of pictures was made by 12 raters who chose the final group from a preliminary set of 81 pictures about which pupils in high-school English classes had written stories. Certain hypotheses for the "good" pictures were set up: that they should be pictures in which there was limited detail, in which there were characters of about the same age as the subjects, in which also the characters showed emotion, which were episodic rather than those in which an episode was not clearly indicated, some of which might suggest family situations, and which might contain present-day, everyday experiences. The criteria by which to evaluate the stories produced were also established and included the general "goodness" or value of the stories from a psychological point of view, the variety of stories produced by a single picture and by the set as a whole, the quality of the story as a narrative and not as a simple description, the quality of fantasy or departure from the scene depicted in the picture. By inter-correlating these two sets of criteria, Symonds finally selected 42 pictures for use. It was discovered that the most serviceable pictures were those that had a minimum of detail, were vague in theme, incomplete in content, and suggestive of characters with whom those telling the stories could identify themselves.

These pictures were used with 20 boys and 20 girls in the junior and senior high schools of Elizabeth, N. J. The stories received were combined with autobiographical and other case-history material. The themes appearing in the stories were tabulated if they occurred more than three times in the total record of an individual. They were classified according to their evidence of psychological or environmental states. Analysis was also made of the stylistic qualities of the stories, i.e., the form of the stories as

a whole, and their endings. The psychological qualities, in descending order of their appearance in the total number of cases, included: aggression, eroticism, negative emotion—depression, anxiety, altruism, success-ambition, repentance-reform, positive emotion, excitement, escape, thinking-deciding, moral-good, etc. The environmental characteristics of the stories, also in order of occurrence, ranged from family relationships through economic, punishment, separation-rejection, accident-illness-injury, school, social-gang, place of residence, appearance, strange-unusual, etc.

Certain sex and age differences were revealed. Boys told more aggressive stories, involving violent death, crime, criminals, or murderers. It was suspected that the girls expressed aggression through disobedience, rebellion, and coercion. Boys had a greater number of stories of police, arrest, prison sentence, love or falling in love, and wealth and riches; girls, of friends and children. The stories of boys showed more exaggeration and reference to specific items such as names, whereas the girls gave more detailed description. The adolescents of 14 years or younger exceeded the older group in stories of a "happy" quality. The 15-year or over age level was linked with significantly more stories involving discouragement, disappointment, anxiety, worry, fear, dread, and alarm; jobs, work, school, conformity, personal attractiveness; sports, social activities, parties, dances; scolding, disapproval, forbidding; anger; reference to age; wondering, thinking, musing; and a wife.

Another variation on the TAT which introduces two new sets of pictures has been suggested by Wekstein (29). Each set has 10 pictures representing unstructured fantasy containing "Disney-like" figures of various somatotypes, including dwarfs, fairies, elves, nymphs, gods, goddesses, lilliputs, ectomorphs, mesomorphs, endomorphs; old and young; kings, queens, and commoners. They are represented in action and repose with facial expressions ranging from hilarity to rage. Various symbols, e.g., whips, guns, knives, musical instruments, and books, are incorporated into the pictures which are represented in various backgrounds such as deep chasms, mountains, forests, caves, and luxurious and forlorn chambers. The pictures are enclosed in clouds, fog, or smoke—a dreamlike aura which helps to allay a subject's presentiments and to lessen resistance. Color is intro-

duced into later pictures in each series. The interpretation is based on Murray's scheme of hero, need, press, and thema, with some alterations. The identifications of the subject are studied for evidences of extroversion or introversion, masculinity-femininity, ascendance-submission, as well as for expressions of superiority, inferiority, guilt, anxiety, asociality, seclusiveness, discord, and mental abnormality. The color introduces another variable not found in the Murray schema. Evidences of color shock, color-preference, and unusual responses to color are observed. No extensive use of these pictures has been reported in the literature.

Apart from their usefulness in the general production of fantasy, pictures have been used for more specific purposes. Thus Schilder and Wechsler (21) used a series of 8 pictures to investigate children's attitudes toward death, as well as a questionnaire, and, with younger children, doll play in which a porcelain doll was knocked over with a bang three times by the finger of the questioner, after which the child was asked, "What has happened?" Schilder and Wechsler found that children are not generally concerned about their own deaths. They regard death chiefly as a deprivation to the child, not as a natural end of life, but as the result of some act of violence.

Franck (3) used 9 pairs of pictures containing male and female symbols and asked for choices between the pairs. Her female subjects who preferred male symbols were adjudged better-adjusted on the basis of a questionnaire. A preference-choice method was introduced also by Goitein and Kutash (4, 5) in their five tests for measuring the field forces of the ego, which in some principles might be compared with the Szondi Test. Each of the tests consisted of 5 elements and was designed to reveal certain aspects of the personality according to Jungian concepts. The choice of an element in each test indicated an individual's position on a 5-point scale. The Symbolic Identification Test, composed of 5 consciously meaningless forms of an unconscious symbolic value, to reflect the *infra-ego* ("id," in Freudian terms), permitted rating on a scale of "drives"; the Annular Selectivity Test, made up of 5 simple rounded lines of varying thickness, from a circle to a tightly constricted ovoid form, indicated the activity of the *supra-ego* ("super-ego") on a scale of "resistances."

The *ipsi-ego* ("ego-ideal") ranked on a 5-point scale of its "emergents," from "inflated" ego values to "immaterial" values, was reflected in the Body Image Test made up of a series of full-length portraits taken from well-known paintings. The choice of one of the Portrait Series, composed of heads from paintings and designed to reveal the *contra-ego*, or force of the ego goals, ranked the individual on a scale ranging from "potent" to "ethereal" appeal. The final group, the Madonna Series, likewise from paintings by old masters, yielded rating of the auxiliary forces mobilized toward goals, the *ultra-ego*, on a scale from "vigorous" to "abstract" forces. While based on an interesting hypothesis, the tests are lacking in evidence that they are valid as indicators of the personality in general or of the specific aspects which they were created to measure.

A further use of pictures for a specific purpose is mentioned in connection with the study of speech (cf. p. 432). Sanford (18) secured comments, giving his subject's impressions of and reactions to 5 paintings by well-known artists, as speech samples for analysis.

A final specific use of pictures is in attitude studies. Proshansky (17) used 17 anti-labor and 18 pro-labor pictures in a group test of attitudes to labor. Morgan and Murray (16) studied sentiments toward war, religion, parents, and sex through a variety of instruments, including the Picture Selection Test made up of 225 pictures depicting 45 foci of sentiments. Set A contained 135 pictures; Set B, 65 pictures, and Set C, 25 pictures. The pictures in each set were arranged in groups of five, out of which a subject was asked to choose either two liked and one disliked, or, one liked and two disliked, and to comment as he chose. Out of the total Set A, the subject picked out the three most liked and the three most disliked; out of Set B, the two most liked and the two most disliked; and, similarly, one each out of Set C. The choices were found to reflect the sentiments of the 11 subjects in the study.

Studies of the processes involved in associations to pictures conclude this review. Apart from the studies associated with the TAT, the process studies are few in number. They began with Murray (15), whose simple experiment has become a classic. Five 11-year-old girls gave estimates of the degree of goodness (benevolence)

or badness (malevolence) of a series of photographs of individuals taken from a magazine. The first presentation of the pictures took place after ordinary pleasurable activity in the sunshine; the second, after two games of "Murder" in the dark. Seventy-three per cent of the faces were estimated by the majority of the group as more malicious than before, when they were judged after the fear-invoking situation. Even the following morning the percentage of faces adjudged as malicious was increased over the first estimate. Unfortunately, no control group was used in this experiment, which might profitably be repeated under more carefully determined conditions.

The experiments of Sanford (19, 20), discussed in the chapter on word association (cf. p. 23) enlarged the knowledge of the effect of experimental conditions upon picture association. Leuba and Lucas (12) and Verville (28) have also contributed to this area of knowledge. The former experimented with the effect of three hypnotically induced attitudes—happiness, criticalness, and anxiety—upon the description of 6 photographs from a current magazine. In each of the three subjects the difference between the mean number of indications of the induced mood, as determined by three judges, and the mean number of indications of the other two moods was statistically significant. The authors concluded:

Commonsense and clinical insight are correct in assigning a major role to moods, feelings and attitudes in the determination of intellectual processes; and even very brief descriptions of suitably chosen pictures show clearly the effects of a dominant attitude.

Verville used incomplete pictures in her study of the effect of the set toward the test situation upon the behavior in the situation. Part of her subject group was told that personality was being tested, and it produced a significantly slower response time than other parts of the group with different sets.

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CHAPTER XI

ROSENZWEIG PICTURE-FRUSTRATION STUDY

THE Picture-Association Study for Assessing Reaction to Frustration, invented by Rosenzweig (1, 2), is made up of 24 pictures resembling incomplete cartoons. Each picture contains two figures. The one on the left of each cartoon is known as the "frustrating" person and is either saying something which frustrates or describing the situation which frustrates the person on the right. The situations included are either ego-blocking, i.e., presenting some obstacle, either personal or impersonal, which interrupts, disappoints, deprives or otherwise directly frustrates the subject (16 situations), or super-ego blocking, i.e., some accusation, charges, or incrimination of the person on the right is made by someone else (8 situations). The blurb, or caption box, on the right is left blank, and all facial features or other evidences of the personality of the individual are omitted in order to facilitate identification with this figure by the subject. The simple instructions request the writing in of the first appropriate reply of which the subject thinks. The standard form of instruction is: "Each of the following pictures contains two or more people. One person is always shown saying certain words to another. You are asked to write in the empty space the very first reply to these words that comes into your mind. Avoid being humorous. Work as quickly as you can." (1). The individual administration of the test includes, also, the subject's reading aloud of his responses and the supplementing of the record by behavior notes. The test may be used with a group, however. A brief description of the test is included in the elementary syllabus of psychological tests by Rosenzweig, Bundas, Lumry, and Davidson (3).

The scoring norms which have been standardized for each picture with 50 normal females, 50 normal males, and 50 mental

patients are based upon the direction of the aggression expressed in the responses, and the types of reaction to frustration. Three directions for the expression of aggression are distinguished: *extrapunitiveness*, represented by the symbol *E*, in which aggression is directed to the environment; *intropunitiveness*, symbolized as *I*, with aggression turned in on the self; and *impunitiveness*, sign *M*, where aggression is evaded in the attempt to gloss over or mask the frustration. The types of reaction are also threefold: the first being described as *obstacle-dominance*, where the barrier stands out in the response; the second, as *ego-defense*, where the ego predominates; and the third, as *need-persistence*, in which the solution is emphasized.

In scoring, obstacle-dominance is indicated by the prime symbol (') attached to the appropriate *E*, *I*, or *M* symbol. Ego-defense is characterized by writing *E*, *I*, and *M* in capitals; need-persistence, by writing these three symbols in small letters, *e*, *i*, and *m*. Each response may thus be tabulated in three columns:

Obstacle-dominance and appropriate direction	Ego-defense and appropriate direction	Need-persistence and appropriate direction
<i>E'</i> , <i>I'</i> and/or <i>M'</i>	<i>E</i> , <i>I</i> , and/or <i>M</i>	<i>e</i> , <i>i</i> , and/or <i>m</i>

An additional qualification of three of the responses is indicated by underlining them, as shown below.

Rosenzweig and others (5) give brief definitions of each of these symbolized categories. Their list is:

Obstacle-dominance responses:

E'—(extrapunitive)—the presence of the frustrating obstacle is insistently pointed out.

I'—(intropunitive)—the frustrating obstacle is construed as in some ways beneficial.

I'—(intropunitive qualified)—in some instances, the subject emphasizes the extent of his embarrassment at being involved in instigating someone else's frustration.

M'—(impunitive)—the obstacle in the frustrating situation is minimized almost to the point of denying its presence.

Ego-defensive responses:

E—(extrapunitive)—blame, hostility, etc., are turned against some person or thing in the environment.

E—(extrapunitive qualified)—the subject aggressively denies that he is responsible for some offense with which he is charged.

I—(intropunitive)—blame, censure, etc., directed by the subject upon himself.

I—(intropunitive qualified)—subject admits guilt but denies any essential fault by referring to unavoidable circumstances.

M—(impunitive)—blame for frustration is evaded altogether, the situation being regarded as unavoidable; in particular, the “frustrating” individual is absolved.

Need-persistence responses:

e—(extrapunitive)—a solution for the frustrating situation is emphatically expected of someone else.

i—(intropunitive)—amends are offered by the subject, usually from a sense of guilt, to solve the problem.

m—(impunitive)—expression is given to the hope that time or normally expected circumstances will bring about a solution of the problem; patience and conformity are characteristic.

Because of the extensiveness of the norms, only a representative illustration can be presented here. The published norms will be found in the article by Rosenzweig, Clarke, Garfield, and Lehnendorff (5).¹

Situation No. 1

The driver of an automobile is apologizing to a pedestrian for having splashed the latter's clothing.

1. *E'* / / (5) I'm sorry too. The suit is new.
That does not help my clothes.
[*E'* / (*E*) /]
2. / *E* / (23) Why don't you watch where you're going?
I bet you're sorry.
You should have been more careful.
People like you should be locked up.
3. / / *e* (0) [Will you stand the cleaner's bill?]
4. *I'* / / (4) Thanks for apologizing.
Very thoughtful of you to stop.
5. / *I* / (2) That's all right. I should have stayed back on the curb.

¹ S. Rosenzweig, H. J. Clarke, M. S. Garfield, and A. Lehnendorff, Scoring samples for the Rosenzweig Picture-Frustration Study, *J. Psychol.* 21 (1946), 49. By permission.

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|----|-----------|----------|----------|------|---|
| 6. | / | / | <i>i</i> | (3) | That is all right. I can get my suit cleaned. |
| 7. | <i>M'</i> | / | / | (6) | Oh, that's alright. This needed to be cleaned anyway.
It is alright. The suit can be easily cleaned. |
| 8. | / | <i>M</i> | / | (39) | That is quite all right; accidents will happen.
That's alright.
That's alright; forget it.
Apology accepted.
Oh. Don't apologize. |
| 9. | / | / | <i>m</i> | (0) | [It will dry in a minute.] |
- Combinations:
- | | | | | | |
|-----|-----------|-------------|----------|----------|---|
| 10. | <i>E'</i> | / | <i>M</i> | / | I'm sorry too but it couldn't be helped. My new suit's ruined. But since you're sorry I'll excuse you [<i>E' / M (E) /</i>] |
| 11. | / | <i>E; M</i> | / | | That's all right. Just so it doesn't happen again. |
| 12. | / | <i>I; M</i> | / | | That's all right. Accidents do happen and furthermore it was part my fault. |
| 13. | / | <i>M</i> | / | <i>e</i> | That's all right—would you be good enough to drive me on? |

The second aspect of the scoring involves the computing of a Group Conformity Rating (G.C.R.) by comparing the subjects' scores on 12 items previously found to produce a particular variety of response significantly often enough to justify their use as criteria. This rating is expressed in a percentage that is found to be higher in a normal group and lower in a patient group.

A study by Sarason and Rosenzweig (7) illustrates one of the applications to which the test might be put. With 20 college students at Clark University as subjects, an attempt was made to determine the relationships between reactions to frustration as measured by the Picture-Frustration Study, ego-defensiveness as illustrated by repression, and ability to be hypnotized. The measure of hypnotizability was the standard technique developed at the Harvard Psychological Clinic. Repression was evaluated by the recall of 15 jig-saw picture puzzles, on half of which the subjects had been allowed to succeed and on half of which they

had failed. Several minutes after the completion of the last puzzle the amount of recall was measured. The results of the experiment indicated a positive correlation of .54 between the amounts of repression and impunitiveness, and a correlation of $+.66$ between repression and hypnotizability. Failure of repression was linked with extrapunitiveness and less hypnotizability.

The test, in its state of relatively immature development, has proven a useful supplement to other personality tests in the clinical battery as illustrated by the case reports of Shakow, Rodnick, and Lebeaux (8) and Rosenzweig and Clark (4). With publication of the test (2), permitting its more extensive application, the number-base upon which the norms are standardized should be more readily enlarged, thus increasing its value.

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CHAPTER XII

THE SZONDI TEST

"The Szondi Test will not be available for distribution until after the war; and we felt to publish extensive data on a procedure of which the reader cannot now avail himself would be inappropriate," wrote Rapaport (3) in 1946. In a sense this sums up the present status in America of the ingenious idea of the Hungarian psychologist, Lipot Szondi. Although the test is in experimental use in several clinical situations, and although a consulting editor, S. K. Deri, has been appointed for the new *Journal of Projective Techniques* to represent the test, the available English bibliography is limited to three publications, two of them abstracts. Szondi, who began to develop the procedure in 1930, has not, himself, published a comprehensive study of the procedures or results.

Rapaport has described the test in general terms (4). It consists of 48 photographs of different faces in 6 sets. Each set contains a photograph of a homosexual, a sadistic murderer, an epileptic, an hysteric, a catatonic, a paranoiac, a depressive, and a manic. The subject is requested to choose the 2 pictures most liked and the 2 pictures most disliked of each set. His responses are recorded on a profile chart (Fig. 2) which contains no distinguishing marks which would indicate to the subject the significance of the pictures.

The vertical columns stand for the various groups of pictures, which are memorized by the examiner: A—homosexual, R—sadistic, C—epileptic, D—hysterical, E—catatonic, F—paranoiac, G—depressive, H—manic. Likes are recorded above the mid-line and dislikes below.

Szondi has given over 5000 tests in establishing its validity. The number of choices in each of the various categories has been found to reflect aspects of the personality. The homosexual choices reflect the nature of the psychosexual development of the

	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)
(6)								
(5)								
(4)								
(3)								
(2)								
(1)								
(-1)								
(-2)								
(-3)								
(-4)								
(-5)								
(-6)								

FIG. 2. RECORD FORM FOR SZONDI TEST. (Letters and figures in parentheses do not appear on the record form.)

individual; those of sadistic murderers, aggressivity; of epileptics, the paroxysmal quality of behavior and thinking; of hystericals, the feeling aspect of the emotional life; of catatonics, the quality of narcissism and withdrawal; of paranoiacs, the expansive forces and creative abilities of the individual; of depressives, the retentive (anal) object-relationships; and of manics, the dependent (oral) object-relationships.

Rapaport sums up the meaning of the choices under three statements of fact supported by Szondi's experiments. In the first place, choices in any one category give an indication of tendencies latent in the subject. No or few choices indicate that the tendency is overt. Secondly, disliked choices represent rejected, repressed, or sublimated tendencies; the liked, tendencies which

have been accepted by the super-ego and are available for manifestation. Thirdly, a high number of choices indicates that the respective tendency is near manifestation.

The number and kind of choices in a column is called the modality of the column. An overt modality indicates that no or few choices have been made; a premanifest modality, that two to six likes have been chosen; a repressed modality, that two to six dislikes are expressed, and an ambiequal modality, equal likes and dislikes are shown in the record of the column.

Szondi found that the choices and their interrelations correlated highly with professions, crimes, and disease-dispositions and agreed with the Rorschach in differential diagnosis. He felt, thus, that he had verified the theory of genotropism upon which he based the test, as indicated by his title for it, "Experimental Instinct-Diagnosis." His formulations of his theory that overt behavior is related to the latent recessive genes in the individual's heredity led to exploration of a threefold psychological phenomenology of genotropism: libidotropism, reflected in the choice of one's mate in that one tends to choose a person in whom those factors are overt which are latent recessive in the self; idealotropism (the ideal of the individual), and operotropism, manifest in the choice of a vocation to satisfy needs originating in latent recessive genes.

Naturally, the use of the test will not depend upon subscription to its underlying concepts. Psychologists will await with interest the opportunity to apply this procedure which, while not offering as full an operational picture of the personality as the Rorschach, still will be of extreme utility, if its results are confirmed, because of the speed with which the test may be administered and evaluated.

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PART III

EXPRESSIVE MOVEMENT AND
RELATED TECHNIQUES

CHAPTER XIII

EXPRESSIVE MOVEMENT

EXPRESSIVE movement has been defined by Allport and Vernon (1) as "those aspects of movement which are distinctive enough to differentiate one individual from another." Of the general studies of expressive movement, the researches of Allport and Vernon (1) and Wolff (19-27) are so remarkable that they overshadow all other investigations of the same topic. The work of the former is of importance, not only for its comprehensive laboratory examination of the consistency of expression in a large variety of expressive movements, but for its review of previous literature in the field. For a digest of the studies prior to the publication of their volume in 1933, the reader is referred to pages 3-21 of *Studies in Expressive Movement* (1); for a description of the experimental apparatus as previously used, to pages 51-122, which also describe the Allport-Vernon apparatuses.

Among the earlier experiments to which Allport and Vernon refer, several are worthy of special mention here in providing a background for a brief description of Allport and Vernon's experiments. A debt to Oseretzky, chiefly in the classification of various forms of expressive movement, is acknowledged by Allport and Vernon. Oseretzky (15) was primarily concerned with the development of a scale by which the motor maturity of a child could be measured. His approach to this analysis of movement was threefold: *Motoskopie*, the analysis and classification of all significant types of expressive movement; *Motometrie*, their measurement; and *Motographie*, their recording.

The experiments of Enke (8) compare with those of Allport and Vernon in administering a large number of motor tests and in examining the agreement of their results. Enke used 500 subjects as against Allport and Vernon's 25. His orientation was in

terms of Kretschmerian typology; his fundamental purpose, to distinguish the motor characteristics of pyknic and non-pyknic types. He concluded "that the movements of pyknics tend to be slow, free, adaptable, uninhibited, easy-going but variable. The schizothymic temperament, which is associated with non-pyknic physiques seems, on the contrary, to express itself in movement that is hesitant, cautious, critical, tense, stereotyped." (1, p. 9)

Allport and Vernon also review the early work of Wolff, whose experiments will be described later, and those of Arnheim, whom Wolff also recognizes as a predecessor. Arnheim (2) carried on an investigation of tremendous scope involving the matching of facial expressions from pictures and silhouettes with personality sketches; facial expressions with literary or artistic style; handwriting with portraits, signatures, and sex. His matchings were based upon 75 sets of materials. The average correct matching in all the experiments was about two and one-half times the chance expectancy. A criticism of Arnheim's experiments is that many of his materials were derived from historical records which might have been familiar to some of his subjects, if not directly, at least through comparison with similar known or recognizable materials.

Downey's experiments with handwriting and gait, carriage and gesture (cf. p. 318 in this volume) are the only American studies quoted by Allport and Vernon as paralleling closely their own experiments, although Downey's plan was less comprehensive.

The problem which was chosen by Allport and Vernon was to investigate as far as possible the intra-individual consistency of expressive movements by direct measurement. They limited the scope of their study to the analysis of behavior which for the most part could be objectively measured, except for a small area of their study which depended upon subjective ratings. They turned their back on the "elusive problems of psychodiagnosis," feeling that answering in part the question of the reliability of expressive movements might advance their usefulness in the clinical situation, could it be shown later that expressive movements have an intimate connection with inner traits of the personality. Thus their findings are of limited application to problems of personality interpretation and provide only a solid back-

ground against which to develop projective techniques using expressive movement. This development has been attempted by Mira (cf. pp. 328-40), and to a certain extent by the graphologists (cf. pp. 291-327).

Descriptions of the individual experiments undertaken by Allport and Vernon absorb 30 pages of *Studies in Expressive Movement*. For the details of the experiments the reader is referred to this book. Only the titles of the experiments and the measures obtained are tabulated here in Table XIII.

TABLE XIII

EXPERIMENTS IN EXPRESSIVE MOVEMENT CONDUCTED BY
ALLPORT AND VERNON (1)

<i>Experiment</i>	<i>Session</i>		<i>Measures Obtained</i>
1. Reading Aloud	I	III	Speed; qualitative observations and ratings on voice intensity, fluency, and movement during speech
2. Counting Aloud	I	III	Speed
3. Walking, out of doors; walking, indoors	I	II	Speed; length of strides
4. Strolling, indoors		II	Speed; length of strides
5. Estimation of distance between hands		III	Average degree of overestimation of length
6. Drawing of circles the estimated size of 25¢ and 50¢ coins		III	Degree of overestimation of sizes
7. Drawing of rectangles the estimated size of dollar bills		III	Degree of overestimation of sizes
8. Estimation of distances outward from and inward toward the body	I	III	Overestimation of distances from body with hands and with legs; underestimation of distances toward body with hands; average speed of estimation
9. Estimation of angles with rotating arm	II	III	Overestimation of angles

TABLE XIII (Continued)

EXPERIMENTS IN EXPRESSIVE MOVEMENT CONDUCTED BY
ALLPORT AND VERNON (1)

<i>Experiment</i>	<i>Session</i>		<i>Measures Obtained</i>
10. Arranged weighted Binet cubes	I	III	Speed of arranging; extent of arrangement; alignment of cubes
11. Estimation of handshake	I	III	Strength of normal grip
12. Estimation of weights	I	III	Under- or overestimation of weights
13. Finger tapping	II	III	Normal speed; pressure of tapping
14. Hand tapping	II		Normal speed; pressure of tapping, and pressure exerted by the fingers on the stylus
15. Leg tapping		III	Normal speed
16. Stylus compression	II	III	Normal speed; pressure exerted by fingers on stylus
17. Circles drawn on paper, with right hand		III	Speed; average area; proportion of unoccupied space
18. Squares drawn on paper, with left hand		III	Speed; average area; proportion of unoccupied space
19. Circles drawn with crayon, R. and L. hand	I		Speed; average area; proportion of unoccupied space
20. Squares drawn on black-board, R. hand	II		Speed; average area; proportion of unoccupied space
21. Squares drawn in sand-box, R. and L. foot	II	III	Speed; average area
22. Parallel lines drawn on paper (pressure board) R. and L. hand	II	III	Speed; fewness or crowdedness of lines; point and grip pressures
23. Length of self-rating checks on rating sheet		III	Length
24. Copying prose paragraph	I		Speed; area of writing; point pressure
25. Writing sentence and signature on pressure board	II		Speed; area; point and grip pressure
26. Writing <i>eee's</i> on pressure board	II		Speed; average length of each letter

TABLE XIII (Continued)

EXPERIMENTS IN EXPRESSIVE MOVEMENT CONDUCTED BY
ALLPORT AND VERNON (1)

<i>Experiment</i>	<i>Session</i>	<i>Measures Obtained</i>
27. Pressure of resting hand	II	Point pressure
28. Writing sentence with crayon on large surface	I	Speed
29. Writing "One, Two, Three . . . Twenty" on blackboard	III	Speed; area
30. Writing <i>eee's</i> in sand with pointer attached to feet	I	Area
31. Muscular tension	II	Range of maximum velocities
32. Rating scale, scored by experimenters, by subject, and by friends of subject, evaluating: 1. voice intensity; 2. speech fluency; 3. amount of movement in speech; 4. amount of movement during idleness; 5. freedom of movement; 6. smoothness of movement; 7. speed of movement; 8. neatness; 9. consistency of neatness; 10. forcefulness of personality.	I	

The results of the experiments may be summarized as follows:

1. The average of the repeat reliabilities of the separate tests is $+.684$, an uncorrected figure, based on tests of which the median time is only 30 seconds;

2. tests repeated in the same experimental session have average reliabilities of $+.75$; those at different sessions, $+.644$;
3. the average correlations for tasks performed with different groups of muscles are just about as high as those performed with identical muscles;
4. there appears to be no general speed factor, although each speed measure appears reliable, and there are three somewhat broad speed factors, namely, verbal (reading, counting, handwriting, and blackboard writing), drawing (drawing figures, etc., on paper; foot drawing, blackboard drawing), and rhythmic (finger and hand tapping, leg tapping, stylus compression);
5. seventeen composite measures, such as "area of writing," produced an average corrected intercorrelation of $+.838$;
6. analysis of all data provided 34 variables which were intercorrelated and which had an average (corrected) reliability of $+.813$;
7. little evidence could be shown for a "general motility factor";
8. there seemed promise of three group factors in expressive movement, an *areal* factor, a *centrifugal* factor, and a factor of *emphasis* in movement;
9. there is no evidence for a general factor of individual consistency, however there is a strong suggestion of two independent composite consistencies, the consistency of the group factors mentioned in 8., and the consistency of a number of specific variables. "There is obviously neither complete generality nor complete specificity" of expressive movement.

The general implications of these findings for the theoretical foundations of projective techniques using expressive movement is summed up in the following quotation:

With the broader aspects of this theory (that expressive movement is consistently reflective of the cerebral field), our results are in agreement. Motor acts are not so specific as to be meaningless, and being organized they must reflect to a large degree the organization of the total brain field. There are degrees of unity in movement, just as there are degrees of unity in mental life and in personality. It is surely not unreasonable to assume that insofar as personality is organized, expressive movement is harmonious and self-consistent, and insofar as personality is unintegrated, expressive movement is self-contradictory.¹

Allport and Vernon's experiments led to further similar investigations. Eisenberg (6) repeated a series of the earlier studies with a more homogeneous group than that used by Allport and

¹ G. W. Allport and P. E. Vernon; *Studies in expressive movement* (New York: Macmillan, 1933), p. 181-82. By permission.

Vernon. He found that "single habits of gesture are stable characteristics of the individuals" in his experimental group. He later criticized the method of studying movement without regard to the basic motivations of the individual (7), claiming that this method had proved fruitless as an attempt to solve the problems of the organization of the personality. He suggested that these problems be attacked at both levels, of motivation and of expressive movement, "making the individual the unit of research, with the ultimate possibility of isolating motivational-mechanism types."

Johnson (13) also used experiments similar to those of Allport and Vernon, as well as others, in her analysis of correlates of normal moods of depression and euphoria. In addition to chained word associations, covert count of spontaneous remarks, and reports on the emotional tone of associations, as previously mentioned, she had subjects estimate with their hands distances of 1 foot, 18 inches, and 2 feet while blindfolded, finding that expansion in euphoria and retraction in depression was present and significant at the 5 per cent level. Another significant difference (1 per cent level) between the moods was reflected by the area of a large sheet of brown paper used by the subjects for writing the numbers backwards from 100. Likewise, the area in writing what was remembered from two paragraphs (presented in a controlled fashion) proved significantly (5 per cent level) less in depression than in euphoria. A trend only was observed in the differences of areas of circles and squares drawn on a blackboard. Evidences of regression in thought trends, speed of decision, rate of perceptual fluctuation with ambiguous figures, and sleep reports completed the experiments. Of course the value of Johnson's experiments stands or falls on the questionable reliability of the reports on the daily moods by the subjects. The experiment has the value of illustrating the logical type of next step to follow Allport and Vernon's work. While this example stands alone, with the exception of Mira's *Myokinetic Diagnosis* considered elsewhere, and while it has noticeable weaknesses, it has the value of indicating a form of experimentation that might prove profitable in the future, especially if groups of subjects who could be separated more reliably were chosen.

The approach of Wolff in studying expressive movement is in sharp contrast to that of Allport and Vernon. Wolff has carried on research in this field over a span of nearly twenty years, beginning in Germany, continuing in Spain, and now in the United States. Although using a thoroughly scientific method, he placed stress not so much upon the objective measurement of the movements themselves as upon judgments of character based on various forms of movement. His methods and results, then, relate more closely to the development of projective techniques than those of Allport and Vernon, for, while they isolate individual movements, they interpret them in terms of their capacity to yield information on the total personality. The assumption that expressive movements are intimately bound up with personality organization underlies his work, although the extent to which this may be so is not assumed, but is, rather, a major phase of his research. He, like Allport and Vernon, is concerned also with the consistency of expressive movement, but less in movement itself than in the impression it makes upon others.

In one of his early experiments (21, 22) Wolff recorded the voices of his subjects by having them pronounce the same sentence. He photographed their hands without their knowledge, as well as their profiles both with and without the front contour covered up. He secured a specimen of handwriting, the script of which was reversed in a mirrorlike way, and also a written record of the subjects' repetitions of a story that had previously been told to them. A final record was made by dressing all subjects alike and filming each as he played a ringtoss game. By matching methods using a number of judges, he found that voice records and handwriting, and style in repeating stories and handwriting could be matched successfully about one and a-half times as often as would be expected by chance. Matchings of the photographs of the profile or of the hands with handwriting, voice, and style were made with better than chance frequency.

A second step in the use of the records was in attempted recognition of the person from the various expressions. The subjects were all well acquainted with one another. They could recognize the voices of the other subjects, but not their own, when strangers' voices were included in the records. Subjects failed

to recognize their own hands, and in most cases those of others. Recognitions of the profiles, script, and style of others were more frequent than of the hands, but self-recognition in these characteristics was not frequently made. In the case of gait, discussed especially in (22), slightly less than 30 per cent of recognitions of others were achieved, whereas self-recognition was 100 per cent correct. Wolff concluded that "gait is in itself a complete form of expression and seems to characterize a person independently of all other forms."

A third use of the records was in the development of characterizations of individuals on the basis of each item. For example, a number of judges were asked to "describe in writing, without any discussion among yourselves, the character of each person from his gait. Try to say something about his vitality, his restraint, whether he is retiring or sociable, a dreamer or a rationalist; say something about his intelligence, his health, his outlook upon the world, his optimism or pessimism. Say what sex he might belong to and what his age might be . . ."

Although the results were not evaluated statistically, Wolff reported marked consistency (a) between various judges' characterizations of the same item of behavior; (b) between judgments on the various items of one individual subject. A striking finding made by Wolff was the contrast between independent judgments and self-judgments on a behavior item which, in the latter instance, was not consciously recognized as belonging to the self. Self-judgments tended to be more detailed, strongly tinged with emotion, hence in some instances noticeably more fatiguing, and reflective of the subconscious wishes of the subject. Wolff believed, as a result of his observations, that his experimental method would make wish-images amenable to study. He also concluded that the unconscious emotional involvement of the subject in characterization of his own personality built up tension that accounted for the resistance to self-recognition observed in almost all experimental items except gait.

Since the face is the most significant but also the most complex expressive area of the body, Wolff subjected profile and full-face photographs to special experimentation. In the case of profiles he used the full picture as well as only the front of the

profile (created by covering the picture from the back of the head to the cheek) as stimuli for personality descriptions. He found the descriptions to be entirely different when part was covered. The number of clues was reduced but the characterological value was increased. The essential traits of the individual made a more intensive impression.

Wolff divided the full-face photograph into two parts, a left-side and a right-side portion. By reversing each of these and combining them with the original parts he produced two composite pictures, one made up of the positive and reversed left sides, and one of the corresponding right sides. When these pictures were presented along with those of strangers, self-recognition was more common in the left-hand half pictures; recognition by others, in the right-hand halves. Subjects could usually match the right-hand pictures of others with the original full-face views, but frequently failed to recognize the left-hand composites as being similar. Where subjects failed to recognize their own pictures, the wish-image phenomenon described above was noted in the descriptions of the left-hand photographs. Wolff concluded that the impressions of the face upon others are caused chiefly by the dominant, right-hand side of the face. He checked upon this by combining the left-hand half of pictures from one year with the right-hand half of those from earlier or later years. The latter determined the judgments as to age and personality.

This experiment enabled Wolff to characterize the expressiveness of the right-hand and left-hand faces. The right-hand face gives the effect of liveliness and individuality; it may be full of vitality, sensual, smiling, frank, active, vigorous, brutal, social, or full of emotion. The left-hand face gives the impression of remoteness from life; it appears in a state of rigor, dead, concentrated, reticent, passive, ethereal, demoniac, solitary, or mask-like. This was true of photographs of living persons, and also of the faces of the dead, of mummies, of animals, of death masks, and of faces in works of art. Wolff compares his findings in this regard with the psychoanalytic observation that in dreams the left-hand connotes the collective and the right-hand, the individual. While he offers no empirical evidence, he attributes this to the hemispheric development of the cerebrum.

Wolff has applied his experimental findings to personality diagnosis (23-27). In his work with children (23, 27) he has made characterizations of their personalities on the basis of blind analysis of still and moving pictures. Photographs of children, collected by others during a routine medical examination, showing the children sitting, standing with arms down, standing with arms spread, and during the process of being measured, permitted analysis of the indifference, balance (as manifest in the distribution of body-weight in proportion to the center of gravity in the shoulders, legs, and so on), and tension of the child, his behavior in relation to his immediate surroundings and the degree of symmetry in corresponding movement of the arms, legs, and hands. The moving pictures made during the Balloon Test (cf. p. 449) allowed judgments as to the degrees of impetuosity, of concentration and attentiveness, of persistence, distraction, or weariness, of initial energy in starting, of the duration of energy, and the characteristic rhythm of the child. Matchings of the characterizations based upon the individual movements of the child were in some instances markedly successful, in other instances not effective. His analysis led him to the conclusion that the degree of consistency in self-expression varies in different individuals, as do the degrees of the psychological, structural, and environmental involvement of the individual in movement. He supported the assumption that through training a separation of the psychological qualities from the structural and environmental might be accomplished, although at the present such distinctions cannot be made with sufficient precision to lead reliably to more than judgments which might confirm other diagnostic findings.

In view of Wolff's use of photographs of the face in his experimentation, it will be of interest to compare some other experiments involving photographs. The following experiments deal, however, chiefly with the ability of judges to find evidence of a single trait or limited numbers of traits in photographs. Some early studies related to photographs on application blanks. Two examples will be sufficient. Johns and Worcester (12) could discover no individual who possessed any particular talent for judging teaching ability from photographs of individuals of varying success as teachers. Husband (11) demonstrated a comparable

lack of validity in judgments based on photographs on vocational applications blanks. In an experiment of a different type, Dusenbury and Knower (5) showed that there were stereotypes in the judgment of emotions based on photographs and a high degree of success among judges in determining the emotion portrayed. The value of their study for personality diagnosis is diminished because the photographs used were based upon actors' attempts to portray a variety of emotions, rather than natural photographs made during actual emotional states.

Samuels (16) repeated some features of earlier experiments by Brunswik and Reiter (3). These investigators had used simple schematized faces that were systematically varied according to: (a) the height of the mouth, (b) the height of the forehead, (c) the distance between the eyes, (d) the length of the nose, and (e) the position of the nose. The faces produced were rated in rank-order by 10 students according to seven scales:

1. mood (gay—sad);
2. age (young—old);
3. beauty (beautiful—ugly);
4. character (good—bad);
5. likability (likable—unlikable);
6. intelligence (intelligent—unintelligent);
7. energy (has energy and determination—has not);

Samuels' experiment confirmed the finding of the Brunswik and Reiter experiment that the height of the mouth is the most significant single characteristic. A high mouth gives the impression of gaiety, youth, unintelligence, and lack of energy; a low mouth, of sadness, age, bad character, but intelligence and energy.

Samuels continued the experiment with real photographs with the characteristics of the schematized pictures, except for the length of the nose. Using Brunswik and Reiter's conclusions as norms, the 10 student judges made only 63 per cent "correct" judgments on the basis of the photographs, as against 88 per cent correct for the schematized drawings. The women judges were slightly superior to the men in the number of correct judgments. It was evident from inspection of the ratings on the real photographs that cues other than the controlled ones were more important in the judgments than the controlled ones.

In a series of photographs presented by Thornton (18) for judgment, he varied single factors. He concluded that the changes in the judgments were significant, but that the effect varies with the different subjects used. He found that a person when smiling is rated higher in sense of humor, kindness, and honesty; when wearing glasses, higher in dependability, industriousness, intelligence, and honesty. An earlier experiment by the same author (17) had measured the ability of student judges to identify crimes from photographs of criminals. The 20 pictures were selected on the basis that the individuals were white, male, had committed one crime each, and were representative of a variety of crimes. Each picture was presented on a slide and a check of the crime from a list of four for each picture was made by the judges. To keep the order of presentation of pictures or of check lists from affecting the judgments, Thornton varied the orders in a controlled manner. Accuracy of judgment was shown to be present but slight. That the pictures provided cues to the judges was attested by the high degree of statistical reliability of the judgments made for each picture.

In a somewhat similar experiment not so finely controlled as that of Thornton, Cook (4) found that his judges all had approximately an equal degree of inaccuracy in evaluating intelligence from photographs. Collective judgments on an individual picture proved equally low and no more accurate in the extremes of ability than in the average range of ability. He did find a slight degree of intercorrelation between the judges.

The evidence from these latter experiments with photographs might have been anticipated. They have two values for the clinical psychologist. First, they begin to define the limits of the information about the personality that may be secured from photographs. Such definitions may not be reliable, however, since it has already been observed that there are individual differences in the amount to which the personality may be reflected in such expressive documents. Second, they provide information on the social stereotypes of judgment based upon various features of facial expression. It is conceivable that this type of information might be utilized in the construction of tests that would reflect the social conformity of judgments of individuals. For example,

using a schematized series such as developed by Brunswik and Reiter which produced marked consistency in judgment among the judges, an experimenter might contrast the judgments of various clinical groups as a test of the extent to which projection of the self and social conformity operates in such performances. Whether or not such experimentation might lead to a projective device is hypothetical.

By way of general summary of the place of expressive movement as a projective method, it must be recognized that, as yet, only tentative exploration of this difficult field has been undertaken. A major problem of the future will be in integrating research based upon objective measurement of expressive movement (as illustrated in the work of Allport and Vernon), studies of the relationships between underlying personality characteristics and expressive movement, and the determination of the personality by means of analysis of the latter (as in the work of Wolff), experiments into the effects of modifications in the personality structure and functioning upon the expressive movements, yielding information that would contribute to personality diagnosis.

While general studies of expressive movement are few, there are many concentrated studies of specific expressive movements and their projective values. For ease of reference these will be considered separately under the headings of graphology, Mira Myokinetic Diagnosis, drawing, painting and other arts, finger painting, completing pictures, visual-motor tests, and voice and speech. These topics, grouped together as expressive movements, must not be regarded as excluding other types of techniques from such a comprehensive category. Play might have been included in the group since so much play activity involves motor behavior. As pointed out in the Introduction the sectioning of the projective techniques is an artificial one, and this fact must constantly be kept in mind.

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CHAPTER XIV

THE ANALYSIS OF HANDWRITING

GRAPHOLOGY, a stepsister of American psychology for so many years, has finally found a rationale for its existence in this country. Within the field of personality diagnosis it is now recognized and accepted as a projective technique. This does not suggest that graphology has managed to overcome the widespread suspicion that has surrounded it, or has reached a state of development that merits uncritical acceptance of its findings. It has, however, begun to emerge as a highly legitimate field of psychological experimentation and research. The studies of Allport and Vernon (1) in 1933 marked a turning point from the hypercritical rejection of graphology by American psychology, as typified by Symonds, who in 1932 claimed that the average correlation obtained in a study of handwriting by Hull and Montgomery (50), -0.016 , "represents about the amount of assurance that one should give to the claims of graphologists." Indicative of the later trend is the fact that in his review, with Samuel, of projective techniques (128) some nine years later, Symonds included handwriting as one of the appropriate topics, and has continued to digest the literature on graphology in the similar review in 1944 (127).

There can be no doubt that one of the important factors bringing about a change of attitude in America has been the transplanting to psychological laboratories in the United States of so many displaced European research workers, who brought with them the favorable attitude toward graphology characteristic of Continental psychology. Some of these refugees were not only friendly to graphology, but also highly skilled as graphologists and have begun to publish in English, instead of the German native to them (e.g., Lewinson, and Wolff).

Much of the early mistrust of the use of handwriting in personality diagnosis was based upon misunderstanding and the discredit brought to the field by "popular" graphologists whose advertising of their non-professional art in newspapers and cheap magazines classed them with tea-cup readers and palmists. As late as 1941, Super (125) published a study showing the non-scientific nature of analyses by a "popular" graphologist. It is a logical error, frequently committed in the past, to transfer such criticisms to scientific graphology, which, it is true, has been characterized by much that is intuitive, but which also has produced a creditable body of sound scientific research. Unfortunately, also, some graphologists have continued to build up disdain for their studies by publication of polemics and handwriting interpretations which do not meet the rigorous standards of science (32), thereby inviting lashing and valid criticisms (20).

ASSUMPTIONS IN GRAPHOLOGY

The scientific analysis of handwriting is based upon certain assumptions, many of which have considerable support from experimentation, others of which are definitely open to criticism until scientific confirmation or denial. These assumptions are implicit in many of the publications and specifically mentioned, in part, by a number of authors (1, 3, 22, 34, 53, 60, 61, 62, 63, 70, 98, 103, 105, 111, 129), as follows:

1. Handwriting is not simply peripheral manual movement. It is the activity of the Gestalt which is called the personality.
2. Handwriting, while it bears the traces of training in penmanship, is an individual movement, resulting in graphic products that bear unmistakable individuality.
3. The individuality in handwriting is an expression of the personality that creates the writing.
4. Variations in the personality are accompanied by variations in the script.
5. Graphology is not concerned with the nature of the written symbol, per se, but with the expressive value of that symbol.
6. A script is a dynamic whole which does not consist of a

summation of isolated signs but of a group of different graphic criteria forming a dynamic relationship.

7. The traits of handwriting when seen as a part of a Gestalt are capable of interpretation and give us clues to the individual personality that has produced them.
8. Handwriting varies in expressiveness from one individual to another and according to the age and penmanship-training of the writer.
9. Any handwriting trait varies in its intensity and frequency, not only in the same specimen, but in the same line. Therefore single-trait analysis, while amenable to statistical treatment, is bound to discredit graphology, unless it is recognized that such analysis is not representative of the methods of graphology.
10. There is a natural limit to the variability of every single trait in one and the same handwriting, except in rare, mostly psychopathic, cases.

METHODS OF ANALYSIS

Proceeding on the basis of such assumptions, graphologists have used varying methods of analysis. The building of a personality picture by establishing the presence or absence of a single sign thought to be representative of a single personality trait, which was one of the early methods of handwriting analysis, has been abandoned in modern scientific graphology, except for research purposes. This method is still in use among amateurs. One of the pioneers of modern graphology, Preyer (91), as early as 1895 was describing handwriting, not in terms of its vestigial characteristics, but in terms of the movements utilized in writing and expressed in graphic script. He tried to show that all differences in handwriting rested upon variations in slanting, length of stroke, width of stroke, the continuity, and the connections. On the theoretical side, he believed that anomalies of the limbs carrying out the writing movement, or central disorders of the brain cortex, or disorders of the sensory system were related to modifications in the handwriting movement, and hence manifest in the script.

Another early handwriting expert, Crepieux-Jamin (22), who participated with distinction in one of the first scientific validation experiments, that of Binet (8) in 1906, advanced the idea of the interrelatedness of graphological signs.

Much of modern graphology is a tribute to the genius of Ludwig Klages, philosopher, characterologist, scientist, and graphologist (53, 59), who built upon the earlier findings of Preyer. Klages, a "personalist," like Stern, proclaimed the unity of character in all volitional movements of any individual. He claimed that every personal movement will assume that manner of movement characteristic of the individual. To him, handwriting, above all other volitional movements, represented the "sediment of living," of character, in which each single movement reflected the sum total of the writer's intellectual, emotional, and physical tendencies. His work on graphology is the basis of most present systems.

Klages distinguished sixteen criteria for the interpretation of handwriting, which have been elaborated on and defined by later writers, such as Enke (35), Krauss (56), Booth (12), Lewinson (63), Meloun (70), Roman-Goldzieher (97, 98), and Saudek (103). Although not all Klages' criteria are used by all graphologists, they more or less form the basis of present-day analysis and interpretation. Those which have been rejected in some quarters, for example by Saudek, tend to be the less objective criteria, such as harmony and Formniveau, although these tend to remain as a part of the quick preliminary survey before measurement of objective features. Klages' criteria, as stated by him and expanded by later writers, are as follows:

*Criterion**Measured by**Interpretative Significance*

1. Regularity

Oscillation in the size, width and slant, height and use of connecting forms.

Index of predominance of will. Irregularity is indicative of weak will, or of impulses of enormous strength relative to the strength of the feelings.

2. Harmony

The way word-bodies stand out against the background. Evidence of disturbance is found in great contrast between short and long letters and in unrhymic proportion of expenditure of time, form, movement, and distribution.

Gauge for personal excitability of feelings. Harmony corresponds to equanimity; a lack of harmony, to excitability. Can arise from fullness of life (plus-valuation) or paucity of life (minus-valuation).

3. Formniveau

Five degrees: from most original and rhythmic writing to unoriginal and arrhythmic writing (school copy).

Reflects amount of expression of "life" in handwriting.

4. Spaciousness

Upper lengths.
Middle lengths—Booth considered greater than $\frac{1}{8}$ " large.
Lower lengths.
Relative proportions: between upper and under lengths.
Difference in height between short letters and letters with upper and/or under lengths.
Distribution of writing on paper.

Indications of "release or bond" (cf. No. 16).

Lewinson (61) indicates the following as the symbolism of these areas of the script:

- a. upper zone—intellectual and spiritual;
- b. middle zone—emotional and social;
- c. lower zone—physical and instrumental.

Criterion	Measured by	Interpretative Significance
5. Speed	<p>Indications of speed:</p> <ul style="list-style-type: none"> a. uniformity of slant; b. increasing slope; c. widening of left margin; d. wide writing; e. simplified letters; f. sharp strokes; g. garland and threadlike connections; h. increased tendency toward right side; i. sharp outgliding end strokes; j. dots for <i>i</i>'s shaped like commas; k. dots for <i>i</i>'s set ahead of writing; l. clear, smooth strokes; <p>Indications of slowness:</p> <ul style="list-style-type: none"> a. change of slant; b. no change in slope; c. left margin vertical; d. narrow writing; e. narrow letters; f. carefully drawn letters; g. "pasty" strokes; h. double angles and double curves; i. increased tendency toward left; j. lack of end-strokes, or end-strokes turned toward left side; k. round dots for <i>i</i>'s; 	<p>Speed: indicates release (cf. No. 16);</p> <p>Slowness: indicates bond (cf. No. 16).</p> <p>In rapid writing, similarities are of greater importance than differences (118).</p>

- l. dots for *i*'s set exactly above down-stroke of *i*;
 - m. uncertain strokes;
- Indications of excess above optimal speed:
- a. omissions of syllables, characters, and parts of characters;
 - b. perseverations;
 - c. anticipations;
 - d. reversed sequence of characters in some words;
 - e. phonetic spellings;
 - f. wrongly inserted superfluous characters;
 - g. touching-up of characters.

6. Pressure

Point-pressure:
Indicated by varying thickness of stroke. Can be measured mechanically by: carbon paper in several thicknesses, Kraepelin balance, tambour method.

Grip-pressure:
Can be measured mechanically by: special stylus with tambour, photography, electro-myogram.

Pressure: expression of psychophysical vitality. Constant and regular pressure demands sustained power of will.

Natural and proper pressure: is in the downward movement, which points to the core of the personality.

Displaced pressure:

- l. pressure in side strokes or upstrokes — displacement of psychophysical energy from ego-centered to object-centered location;

Criterion

Measured by

Interpretative Significance

2. displaced pressure where neither rhythm nor flow is disturbed—individual uses manual skill in constructive way—sublimated;
3. certain places emphasized but others neglected — overcompensation.

7. Width

Of letters:

Measured by upper loops in *b*, *k*, *h*, *l*; of lower loops in *f*, *g*, *y*.

Of writing:

Distance between single letters: "narrow" means distance between letters is less than height of short letters; "wide," distance greater.

8. Slant

- a. degree of angle formed by downstroke with horizontal line;
- b. straightness or curvature of lines;
- c. degree of angle formed by writing line with horizontal line.

Indicates speed, release or bond, degree of adherence to "school copy."

Slight variability and one with deviations in either direction indicates fluency.






Marked oscillation occurring with other marked irregularity indicates moodiness, restlessness, impressionability, and emotionality (96).

9. Stroke

Indicative of bond or release.

- a. sharpness or pastiness;
 - b. smoothness or flabbiness;
 - c. ataxic (broken strokes)
 - d. tremor;
 - e. roundness;
 - f. angularity;
- all reflecting the angle between the pen and the paper, and the extension or flexion of the elbow.
End-stroke: sharp, outgliding, turned toward left, or absent.

10. Forms of connection

- a. Arcade — 
- b. Thread — 
- c. Garland — 
- d. Double Curves — 
- e. Sacre-Cœur-Ductus — 
- f. Double Angles — N
- g. Broken Letters — K I T

11. Degree of connectedness

Three types:
unconnected;
equilibrated;
connected.

Irregular change between connected and disconnected indicates serious disturbance.
Connectedness: positive interpretation.

*Criterion**Measured by*

If more than four letters in a word are written without interruption, is considered connected (12).

Interpretative Significance

tion is logical activity, a gift for synthesis and dialectic, of deliberation and calculation; negative interpretation: lack of new ideas —the mind can elaborate only on what is present.

Unconnectedness: positive interpretation is wealth of spontaneous ideas which often result in original discovery and intellectual initiative; negative interpretation, tendency to be erratic, to lack logic—lack of consideration and common sense.

12. Amount and character of direction

Tendency to right or to left. May or may not be indicated by slant, but always an inclination to omit strokes to left or right, respectively, or to misplace them to the right or to the left, respectively, or to add strokes to the right or to the left, such as curls. Always in comparison with school copy.

13. Initial and terminal emphasis

The comparison between the width and height of initial and terminal letters and the rest of the writing: words, sentences, and the whole document. Whether or not the initial letters are detailed. The relative

A writer's concentration and consciousness is strongest at the beginning of pages, lines, and words; it decreases in the course of writing, is practically nil in the middle of

heights of the first and second parts of the capital letters. Whether or not the beginning letters are imitated or original.

words, and somewhat marked toward the end.
 Emphasis originates in a desire for self-estimation. Initial emphasis is an indication of a driving force.
 Positive meaning: desire for significance;
 Negative meaning: vanity.

14. Overlining and distribution of the movement

The amount of concurrence of lines, especially in those letters that normally contain loops.

15. Indications of so-called "acquired" writing (school copy).

- a. Letters are either carefully formed according to the school copy or are simplified or amplified, or forms of single letters may be exchanged for one another;
- b. Downstrokes of letters like *m*, *n*, and *u* are connected either according to the school copy, or, in the form of garlands, arcades, double curves, double angles, or the supported angle;
- c. The pressure of the stroke may be either strong or weak; it may be placed in downstrokes, according to the school copy, or it may be misplaced in side-strokes or in upstrokes;
- d. The quality of the stroke may be either sharp or pasty.

Writing that is more natural is easier to interpret. In artificial writing, all dissimilarities are of greater significance (118).
 Maintenance of school copy is indicative of a banal, non-imaginative, submissive mind.

Criterion
16. Bond or release

Measured by

Balance between bond and release (either restricting or releasing psychophysical energy):
 Release:
 speed;
 largeness;
 lack of pressure;
 width;
 slant to right;
 pastosity;
 small difference between long and short letters;
 upper lengths longer than under lengths;
 continuity;
 double curve;
 garland;
 amplifications;
 tendency toward right side;
 “scripture continua”;
 ascending lines;
 increasing left margins;
 smooth stroke;
 irregularity;
 harmony.
 Bond:
 slowness;
 smallness;

Interpretative Significance

If inner impulses are stronger than requirements of external world, there will be indications of release; if conscious will for adaptation to external resistance prevails there will be greater indications of bond.

pressure;
narrowness;
vertical writing;
sharpness;
great difference between long and short letters;
under lengths longer than upper lengths;
discontinuity;
double angle;
arcade;
simplifications;
tendency toward left side;
"scripture distincta";
descending lines;
decreasing left margins;
disturbed smoothness of stroke;
regularity;
lack of harmony.

The analysis of handwriting usually consists in microscopic and accurate measuring of those criteria that are objective enough to yield measurable items, and in determining the presence or absence of other indications. Interpretation depends upon the intercomparisons of the many isolable factors.

Although thorough investigations of the handwriting found in various clinical conditions are, for the most part, still to be conducted, several authors have presented tentative lists of criteria for differential diagnosis using handwriting. For example, Marum (66) reports the writing characteristics of six clinical classifications, as found in Table XIV. Lewinson (61) has de-

TABLE XIV
WRITING CHARACTERISTICS OF SIX CLINICAL GROUPS
(After Marum, 66)

<i>Clinical Condition</i>	<i>Handwriting Characteristics</i>
1. Depression	<p>Failing or fluctuating lines; Heavy pressure, or particularly thin, timid, and irregular pressure; Slanting to left; Signature placed toward middle or left of paper; Small letters; Diminished height of capital letters; Corrections; Slow writing. (At least two of the above have been found in cases where depression is stated.)</p>
2. Anxiety	<p>Narrow distances between words; Narrow distances between lines; Words end abruptly; Ellipses (in <i>o</i>, <i>a</i>, <i>g</i>, etc.) may be compressed by next letter; Lines begin at extreme left without a margin; Signatures may be on left half of paper; Slant and flourishes may be to the left; Pressure either heavy or there are irregular losses of pressure; Writing small and slow with occasional abrupt loss of height.</p>

TABLE XIV (Continued)

WRITING CHARACTERISTICS OF SIX CLINICAL GROUPS
(After Marum, 66)

<i>Clinical Condition</i>	<i>Handwriting Characteristics</i>
3. Obsessional Neurosis	<p>Regularity and rigidity with some artificiality of style; Narrowness; Small letter formation; Touched-up letters; Perpendicular direction, or slant to left, or irregularity of slant; Wide distances between words combined with narrow letters, or extremely small distances between words and lines.</p>
4. Hysteria	<p>Two types: a. Irregularity of height, width, and slant; Fluctuation of lines; Indistinct, mixed ligature. b. Grotesque slant to left; Exaggerated flourishes; Heavy pressure; Covering strokes; Irregular connectedness; Lack of proportion in accentuation of some letters, particularly initials.</p>
5. Epilepsy	<p>Sudden deficiency in writing pressure indicates loss of consciousness, but found also in hysteria and anxiety with loss of consciousness.</p>
6. Schizophrenia	<p>Rigid, unnatural writing; Sloping to left; Covering strokes in middle zone; Some tendency to threadlike ligature; Exaggerated loops in lower zone; Discrepancy between text and signature; Increased heights of letters in middle zone at ends of words; Large distances and horizontal strokes between words.</p>

scribed the following as characteristics of dynamic disturbances in handwriting common to three psychoses (based on 20 cases of schizophrenia, 32 cases of psychosis and neurosis with pronounced paranoid tendencies; and 43 manic-depressives): (a) disturbed rhythm (irregularity or rigidity); (b) lack of balance between bond and release; (c) arhythmic distribution (stereotype or beyond control); and, (d) tempo (extremely slow or extremely fast.) Paskind and Brown (88) have presented some objective evidences from the handwriting of deteriorated and undeteriorated epileptics and compared their findings in these cases with 51 deteriorated schizophrenics, 45 advanced dementia paralytics, 46 men with no nervous or mental disease, 40 imbeciles, 139 children from second to seventh grade in school. They found that the heights of small letters are significantly larger in deteriorated epileptics than in undeteriorated epileptics, schizophrenics, or dementia paralytics, but not significantly different in non-deteriorated epileptics, schizophrenics, and dementia paralytics. The heights of the tall letters were significantly larger in deteriorated epilepsy than in non-deteriorated epilepsy or dementia paralytica. The width of the letters did not give a significant difference in the case of the two varieties of epileptics, but the difference between the averages for the deteriorated epileptics and the schizophrenics was significant. A further measure, the ratio between the heights of the small and tall letters differentiated the deteriorated epileptics from the non-deteriorated epileptics and the schizophrenics. The handwriting of the deteriorated epileptics resembled that of imbeciles and younger children, while that of the non-deteriorated resembled that of older children and normal adults. This indicated that the differences were due to the development of the cerebral centers used in writing.

Roman-Goldzieher (98, 99), studying the speed and pressure of handwriting in 2145 boys and girls between the ages of 11 and 18 years, discovered interesting sexual and age differences. In speed, the variability of girls is less than that of boys up to the age of 18, when the ranges tend to become equal. With age, speed in both sexes increases, the most significant changes taking place between 11 and 14 years. At 15 there is a slowing down

of progress, and then slight increases after that. Girls shows a spurt in speed at 13, boys at 14, at which age they are always inferior to girls. In point-pressure, the variability decreases with age. At 12, there is a striking decline, followed by a rise, in the mean pressure. Boys achieve at 13 the pressure they will have at 18. Girls, on the other hand, show a rise in pressure at 16. Boys and girls are the same at 11, from 12 to 14 years girls are significantly weaker, at 15 there is a decrease in the difference, from 16 to 17 there is an increase in the difference, and at 18 there is no difference.

Further studies on the differences in speed and pressure in the writing performances of 100 stutterers, 43 deaf-mutes, 77 girl juvenile delinquents, and 46 ungraded backward children showed that all these groups had retarded speed. In those stutterers whose speech defect was the most severe the highest pressures were recorded. The juvenile delinquents gave characteristic poor pressure scores. Eleven per cent of them had lower pressure than found in 1000 normals. Only 16.2 per cent of the backward children had heavy pressure.

Two studies of writing characteristics associated with physical illness are worthy of mention. Schönfeld and Mengel (115) found that, after the "reserve capacity" of the lungs had diminished in tuberculosis, wavering and disconnected upstrokes, flattening of normal oval forms, broken downstrokes, breaking of loops in upper and under lengths, and rest stops were observable in the writing of patients. Lewinson (60, 62) studied the writing characteristics of chronic arthritics both before and after the onset of the illness. Both before and after the following signs were present:

1. Misplaced pressure; 2. tendency to left; 3. slowness; 4. school-copy writing; 5. detailed beginning letters; 6. good distribution of writing; 7. a big difference in height between short letters and letters with upper and/or under lengths; 8. the second part of capital letters higher than the first; 9. imitated capital letters; and 10. emphasized spacious under lengths.

After the onset the following changes in characteristics were observed:

1. There is an increased tendency toward the use of mask forms (arcade, thread, sacre-coeur-ductus, curls, and broken letters);
2. There is an increase in the angular tendency;
3. Sharp, tender writing gives way to pasty writing;
4. Regularity and accuracy yields to irregularity and inaccuracy;
5. A smooth, stretched stroke becomes a flabby stroke with ataxic disturbances; and,
6. There is a decrease in a characteristic spaciousness of the upper and middle lengths, and an increased spaciousness of the under lengths.

These studies are suggestive of the tremendous range of problems awaiting research in the field of graphology.

STUDIES ON THE VALIDITY OF HANDWRITING AS A MEASURE OF THE PERSONALITY

The most important of the early experiments on the validity of handwriting, and the pattern for many later experiments, were those of Binet (8) in 1906. His first study concerned the ability of untrained judges and trained graphologists, among whom was Crepieux-Jamin, one of the most famous modern exponents, to determine the sex of writers from 180 addressed envelopes written in about equal numbers by men and women. The range of scores was from 79 per cent correct, by Crepieux-Jamin, to 66 per cent. This experiment was later repeated by Downey (25), with the refinement of controlling the sex of those to whom the envelopes were addressed, and using only non-expert judges. Her results (range 77.5 per cent to 60 per cent) were essentially the same as Binet's. Further experiments by Newhall (83), Kinder (52), and Broom, Thompson, and Bouton (15) on sex differences in handwriting did not add materially to the information gained by Binet. Arnheim (3) found, likewise, that his untrained group of judges could make some discrimination of handwriting on the basis of sex. None of the experiments showed striking sexual differences, which would tend to confirm the opinion of many experts that the handwriting of adults reflects, not the physiology, but the psychology of the individual.

Goodenough (43) compared the ability of 10 men and 10 women judges to classify samples of handwriting according to

the sex of the writers. She found no reliable difference between the abilities of the men and the women as judges, although the women showed a slight superiority and a far higher degree of confidence in their judgments. There was a positive relationship between the feeling of certainty and the correctness of judgments for both sexes. Only a slight and nonsignificant tendency for each sex to judge like-sex writing with greater accuracy was noted.

In another experiment, Binet (8) obtained samples of writing from 37 individuals of recognized intellectual eminence such as Rénan and Bergson, with which he paired the writing of a person of similar education and social level but of very mediocre intelligence. Crepieux-Jamin made only 3 errors out of the 36 sortings, and six others made scores ranging from 86 per cent to 61 per cent correct. This experiment was more likely to produce satisfactory results than that of Omwake (84), who found the ability of untrained subjects to judge intelligence from handwriting to be low. Broom and Basinger (14) evaluated students' ratings for intelligence and weight of 30 samples of handwriting from fellow college students. They found a low validity between ratings for intelligence or weight in deciles and the actual intelligences and weights of the subjects. A repeated rating in different order ten days later showed that the judgments were not reliable. Middleton (76), using essentially the same technique, found practically zero validity and an unsatisfactory reliability, in the ability of untrained subjects (college students) to judge intelligence from handwriting. A comparable experiment on the ability of college students to judge neuroticism, self-confidence and sociability (77) as indicated by the Bernreuter test from handwriting gave coefficients of $+0.31$, -0.15 and $+0.42$, respectively.

In a third study by Binet (8), only Crepieux-Jamin, with 3/11 errors, was able to sort the writing of the 11 notorious assassins from that of 11 honest citizens of rather humble walk of life. Two other graphologists made scores of 5 out of 11 errors, only slightly better than chance.

Interesting though the above experiments are, they are subject to valid criticisms on the part of skilled graphologists. In the

first place, the use of untrained judges reflects on graphology about as much as the layman's capacity to read the record of an electroencephalograph would describe the validity of this instrument of the medical specialist. A second criticism would be on the interpretation of the findings. The low relationship generally shown between handwriting and sex or intelligence would have been anticipated by graphologists who generally demand the age and sex of the writer before any interpretation of handwriting, and who would concur with Marum (66) that graphological assessment of intelligence needs more subtle methods than are now available. In the third place, even psychologists would, in general, be critical of the merit of the Bernreuter test as a measure of the characteristics rated in Middleton's study (77).

Other experiments unimportant in the evaluation of graphology are those that attempt to equate trait-signs in handwriting with personality traits as measured by other instruments. The best known of these was reported by Hull and Montgomery (50) in 1919, and has been extensively quoted as a condemnation of graphology, as noted earlier. Seventeen fraternity members at the University of Wisconsin performed as subjects. They rated one another on 6 character traits, from which a combined rating for each individual was derived for each trait. Correlations between these trait scores and the measures of characteristics in the writing supposedly indicative of the traits (such as "heavy lines" and "heavy bars on the t's" revealing "force") were found to be no better than chance, and to average $-.016$.

Downey (27) reported an experiment in some respects similar. She had 12 psychologists rate 28 other psychologists on a number of character traits. She then analyzed the handwritings of these same individuals and developed ratings on these traits from signs in the handwriting. She used a great variety of indications of a specific character trait in the handwriting and obtained correlations of from $+.23$ to $+.61$. At the time of the experiment Downey pointed out that the use of trait-signs had reduced her scores, an insight not noted in the Hull and Montgomery experiment.

In this same tradition is an attempt by Stackman (121) to find a relationship between extracurricular activity and handwriting.

The writing of 100 upperclassmen and upperclasswomen at Indiana University showed no significant relationship between four qualities in the handwriting and the amount of participation in campus affairs.

Somewhat earlier Land (58) selected 10 cases of extreme back-hand writing, 10 cases of downhill alignment, and 10 control cases with forward and uphill alignment from the writing of 211 students and, comparing these groups with their scores on the Pressey X-O test, found the experimental groups to be significantly more "emotional." The general criticism of this and the other experiments is that they overlook the interrelatedness of handwriting signs and the possibility of signs bearing different meanings in terms of their organization in the total graphic Gestalt. On the other hand, an experiment that points to the value of the attempt to correlate personality variables with handwriting variables is that of Pascal (87) who correlated 36 personality variables with 39 handwriting variables obtained from 22 subjects. He found that certain aspects of handwriting are significantly related to certain aspects of personality. The extensiveness of his scheme of research and of his statistical calculations distinguishes his work from the other trait-sign studies.

Experimentation that is more just to the cause of graphology, not that this should be, necessarily, a goal in research in handwriting, gives the graphologist freedom to make his judgments in whatever ways he chooses and then compares his results with other measures. In many cases his task has been to discover the quantity of some personality characteristic or characteristics in scripts. Experiments of this type have, in general, reflected more credit upon graphology.

For example, Couvé (21) studied employees of the Deutsche Reichsbahn by having foremen rate 12 employees on a 3-point scale according to their efficiency. The graphologist, following a similar rating, gave 10 agreements and was one step removed in the other two cases. In a complementary study, nine untrained judges rated the handwriting and gave 68 per cent correct judgments, 16 per cent, one step removed, and 16 per cent wrong, whereas 33 per cent might have been right, one step removed, or wrong by chance.

Von Foerster (37) asked five judges to rate the scripts of 70 pupils according to their aptitude. While the judges agreed among themselves, the correlation of their scores with tests of intelligence and special ability was only $r = +.29$. Von K gelgen (57) rated the handwriting of 48 pupils at the Institut f r Industrielle Psychotechnie on 9 traits and compared his results with teachers' ratings on the same traits on a similar 5-point scale. He obtained complete agreement on 66 per cent of his judgments (chance would be 20 per cent).

In a significant experiment on "honesty," Saudek (105) obtained 73 handwriting specimens from employees in 18 business firms. By examining for 10 signs, any 4 of which occurring together were claimed to reveal dishonesty, he predicted dishonesty in 14 cases, all of which were correct according to the employers. In no case was an honest person placed in the dishonest category, and in one case, with 3 out of the 10 signs, described as honest by Saudek, the individual was classified by the employers as dishonest. The most important of the signs, according to Saudek, was the unusual feature of *o*'s, *a*'s, *d*'s and so on open at the bottom, which is only found in dishonest or, at least, very insincere persons and present in 30 per cent of habitual thieves in the files of the French police.

Seesemann (120) analyzed the scripts of 20 mining officials for the presence or absence of 14 qualities and gained 93 per cent agreement with the Yes and No answers to questions about these traits answered by foremen and directors who knew the officials well. Henning (48), however, rejected these studies as based on insufficient cases and demonstrated that in his own study among 2000 undifferentiated children there was no agreement between ratings of proficiency from handwriting and aptitude tests. Crider (23), likewise, found low correlations between 16 traits measured by tests and ratings by two graphologists, although one graphologist who repeated the rankings one month later agreed highly with himself. On the other hand, although Crider found the graphologists did not agree between themselves, Schorn (116) and Powers (89) each found rather high accord among five graphologists in the analysis of single specimens of handwriting.

In a more comprehensive study using 23 freshman college students, Allport and Vernon (1) obtained specimens of the subjects' handwriting over a period of twelve months previous to the graphological analysis. Full personality sketches, as well as profiles of test scores of great variety, including intelligence, interest, aptitude, and personality tests, as well as college grades, were available. Two graphologists participated in the experiment and provided personality sketches based only on the handwriting. In addition, one provided ratings of the subjects on personality traits; the other, Professor Downey, selected subjects whom she expected to stand high or low on certain of the standard tests the subjects had taken. The results were, for the most part, very irregular, and in general low. Allport and Vernon in their own discussion of the findings suggest that the immaturity of the subjects, possible bias or lack of knowledge of the subjects on the part of the experimenter and certain other deficiencies in technique may have distorted some of the results.

An experiment of better design, described by Meloun (72) as "a model for all future experiments of this kind," was carried out by Cantril, Rand, and Allport (16) a short time later. Fifty subjects participated, each of whom had taken the Allport-Vernon Scale of Values Test. A business letter written by each of the subjects was supplied to a skilled graphologist along with information on the sex and handedness of the writers. The graphologist, who understood the Spranger types measured by the Allport-Vernon Test, was asked to judge, in any way he wished, the magnitude of five types of interest in each of the subjects. The correlations between the interests as shown by the test and the ratings of the graphologist were: aesthetic, $r +.40 \pm .08$; economic, $r +.29 \pm .09$; theoretic, $r +.25 \pm .09$; political, $r +.07 \pm .10$; and religious, $r -.06 \pm .10$. The chief factor in reducing the correlations was the large number of slight disagreements. Meloun (72) in his discussion of the experiment points out that the variation in the expressiveness of handwriting from one individual to another and the fact that the Allport-Vernon Test, in itself, measures something extremely variable which may or may not be an expression of the personality, makes the height of the correlations obtained of great significance.

The following year, Cantril and Rand (17) continued their study of the relation between the Scale of Values Test and handwriting. Out of 60 records where individuals scored high on one value of the Allport-Vernon Test, 6 were selected whose graphological evaluations corresponded with one of each of the 6 values. Photostatic copies of the standard samples of handwriting with a description of Spranger's 6 types were sent to 28 graphologists, who were asked to match the script with the appropriate type. Twenty-six responses were usable and their results were controlled by comparison with results of matchings by 26 laymen. The average number of correct judgments of the graphologists was 3.8, with a probability of less than 1/1,000,000 that such a result could occur by chance. The average number of correct judgments of the laymen was 1.1. The analysis of the errors of the graphologists shows a tendency for them to mistake the social for the religious, and to confuse the political and the economic. They never judged the social to be theoretic or political, the religious to be aesthetic or political, the theoretic to be social, the political to be theoretic, social, or religious, or the economic to be aesthetic.

In an attempt to predict drawing skill from handwriting characteristics, Meloun (74) was able to establish criteria that enabled him to make correct judgments in 34/44 cases; a difference of one degree, in five; and wrong choices, in only five.

A method of measuring validity of handwriting analysis which has increased in popularity and which forms the basis for several recent experiments is the matching of personality sketches from handwriting, or handwriting itself, with personality pictures obtained by other means. This technique of evaluation is found in each of the following experiments.

Mayer-Benz (67) arrived at considerable agreement between her interpretations of handwriting and case histories of the writers in a mental clinic. Bobertag (10) had six professional graphologists prepare sketches of each of five writers who were well known by fifteen judges as fellow university teachers. Of the 450 matchings, 80.7 per cent were correct, whereas only 20 per cent would have been expected by chance, 4.7 per cent were undecided, and only 14.6 per cent were incorrect. Most of the per-

sonality sketches by the graphologists were in substantial agreement with one another.

The matching technique was varied by Powers (90), who developed personality outlines of 10 subjects and requested matchings with their scripts. One hundred and forty-three male undergraduates, 25 college faculty members, and 17 professional graphologists undertook the matchings. The professional graphologists averaged the best scores, although two students made 6/10 correct matchings, significant scores. Some matchings were found to be easier than others, and "when large errors occurred they seemed to be 'good' errors." Certain limitations in this method were pointed out by the graphologists, for example, the inadequacy of the sketches, the lack of signature, unnaturalness of the writing (a copied passage of 40 words), the brevity of the copy, and the use of photostatic reproductions.

Analyses of a college student by means of the Rorschach, an appraisal from spontaneous drawings, and a graphological analysis (by Lewinson) were matched by Munroe (81). All analyses were independent and blind. All methods resulted in substantial agreement with each other and were especially close on the theory of the dynamics of the student.

An experiment with 50 neurotic patients at Mill Hill Emergency Hospital, reported by both Marum (66) and Eysenck (36), was based on a questionnaire to the patients, a sample of handwriting of each, intelligence test scores, character sketches on the basis of the handwriting, and anonymous summaries of the case records of the patients. The results of the various parts of the study may be summarized as follows: 1. Out of 1350 judgments concerning certain points of the patients' temperament and personality, $62\% \pm 1.4\%$ S.E. were correct as checked against the patients' own answers on the questionnaire (chance = 50%). Out of 152 judgments on which the graphologist felt particularly confident, $68\% \pm 3.5\%$ S.E. were correct. 2. The graphologist did not succeed in predicting intelligence, except at the very superior level. 3. The graphologist succeeded in matching the character sketches of the patients. 4. Psychiatrists did not match the character sketches by the graphologist with the actual personalities of the patients well-known to them with better than chance suc-

cess. 5. Ten psychologists and psychiatrists with little or no knowledge of graphology matched the character sketches of the patients as written by the graphologist with their handwriting with less than chance success. It was again shown that some persons differ consistently in the ease with which their handwriting can be diagnosed and that certain traits differ in their ease of detection.

The final experiment of this type, conducted by Wells (133), attempted matchings of the blind diagnoses of 108 Harvard undergraduates from their scripts and psychiatric "histories" on each. There was agreement in about 70 per cent of the judgments, but wide discrepancies in individual cases, several with practically no disagreements and two with disagreement at practically every point. A tendency was found for the more "soundly" integrated individuals to be judged in closer agreement with the psychiatric history. By graphological standards, a neurotic script is unlikely to be associated with a "sound" personality rating; however, a healthy-looking script might very well be associated with less sound integrations. Comparing ratings in the graphological histories with results in running a treadmill, and some aspects of the Rorschach records, Wells found no predictive value from one to the other, except that the trait "detail mind" had some predictive property for $\frac{\text{Normal details}}{\text{No. of responses}}$ on the Rorschach.

No conclusive evidence for the validity of handwriting as a measure of personality can be drawn from the experiments described to date. Many of them show weaknesses in their design, yet many of the better experiments do not yield strong support for the claims of graphology. On the other hand, matching experiments seem to be building up evidence that handwriting is capable of giving information of value to the psychologist. If further experimentation yields confirmation of handwriting's worth as a diagnostic medium, an especially useful tool will be available for measurement, since one of the chief advantages of handwriting is the ready availability of specimens for analysis.

Cantril, Rand, and Allport (16) have set forth a list of the demands of graphologists and psychologists to be met in con-

ducting experiments on handwriting, which would be a helpful code to follow in further research studies. The requirements of the graphologists are: 1. that they be allowed freedom to examine the specimens of handwriting in any manner they choose; 2. that no psychologist undertake by rule of thumb to apply the alleged "trait-signs" and then condemn graphology by referring to his own inevitably low results; 3. that natural, adequate, and honest specimens of script be used; 4. that mature subjects be employed, whose sex, nationality, and handedness are known to the graphologist (unless the experiment explicitly requires that one of these variables remain unknown); 5. that graphologists be allowed to write their analyses in any terms they choose to use; 6. that if the psychologist tends to "prove" or "disprove" statements, he employ absolutely valid criteria; 7. that when disagreement results, the future be allowed to supply the final validation. (Many graphologists speak of latent tendencies, or make prophecies that are not verifiable at the time of the experiment.) On the other hand, the preferences of the psychologist are: 1. that the graphologist make judgments solely on the basis of handwriting (therefore, no historical personalities must be used and the context of the writing must be entirely impersonal); 2. that the graphologists not prepare free characterizations of the subjects since such characterizations are often ambiguous and inaccessible to verification; 3. that quantitative statement of the magnitude of agreement between the psychologist's and the graphologist's analyses of personality must be obtainable; and 4. that the methods of validation be objective. On the whole the above requirements seem reasonable, if somewhat difficult to meet in all experimental situations.

RESEARCH ON CHARACTERISTICS OF HANDWRITING

One of the earliest interests of researches in handwriting was in the presence of family resemblances. In 1910 Downey (26) noted similarities between the handwritings of different members of the same families. Starch (123) recorded objective likenesses between the handwritings of brothers and sisters. More marked resemblances between the scripts of twins than between those

of siblings were found by Kramer and Lauterbach (55). Gesell, also, in his survey of the development of twins pointed to their comparability in writing (41). Seeman and Saudek produced a noteworthy series of articles (107, 112, 113, 114, 118, 119) on graphic characteristics in the writing of twins, using identical twins, reared together and apart, and normal and abnormal twins, including a pair of conjoined twins, as subjects. They found that twins not only had markedly similar writing, but also evidenced important differences in line with their personality differences. In 1937, Reinhardt (94) published a review of twin studies in graphology.

Other studies of the relationship of personality to handwriting have been based upon the forms produced in dual personality. Both Melcher (69) and Mühl (80) have studied this phenomenon, contrasting the natural script with the automatic writing. While the differences between the scripts were more marked than between normal writing and consciously disguised writing, the similarities were sufficient to indicate that the writings were produced by the same individual. That handwriting is an individual characteristic is the basis of Osborn's standard volume (85) on the identification of handwriting. The experiments of Preyer (91) and Saudek (106) have shown that no matter which muscle area of the body carries on the writing, the script retains its individual mark.

Relationships between handwriting and other physical expressions, such as gait and gesture, have been analyzed in several experiments, beginning with Downey (27), who classified the handwriting of 12 subjects according to a number of qualities. Eleven judges then rated the gait, carriage, and gestures under the same rubric. A 60.5 per cent correspondence was found between the two ratings. Von Foerster actually brought 8 subjects before a group of 25 judges who were asked to match the handwriting with the personality as seen. One judge made 6/8 correct matchings, although the average was very slightly above chance.

Saudek has pioneered in the study of personality development through longitudinal study of a case, with samples of handwriting at various ages. He traced the personality growth of an

English public schoolboy, Harry, through the years from 8½ to 15½ by analyzing 131 letters and other documents (110, 111). He was able to demonstrate growth changes and periods of emotional disturbance through the handwriting. This same author has discussed the national characteristics of American handwriting (109).

A rather unique study was conducted by Rottersman (100) of an apparently superficial aspect of handwriting, the preference for green ink in male selectees at an induction station. He found that of those who used this color by preference, 50 per cent were rejected for military service by the psychiatrist, as compared with 10–15 per cent of rejections in the normal literate population.

A test using handwriting was developed by Downey (28). Although considered of great promise, and productive of extensive research in its early years, the Downey Will-Temperament Test has been almost abandoned as a psychological tool. Uhrbrock summarized the research on this instrument in his analysis of the test in 1928 (131).

The bulk of the research on writing deals with the study of personality factors associated with writing, frequently in connection with validity studies. Another prominent scientific area in the field is in the study of the actual physiological mechanisms involved in the writing movement. Goldscheider (42) in 1892 introduced an experimental method to get pressure graphs, finding that speedy handwriting produced higher spikes of the pressure graph and a higher average level, never reaching the zero line, as may be the case in slow writing. Another of the early workers to study the physiology of handwriting was Crepieux-Jamin (22). McAllister (68) found that speed of writing was slower in producing centripetal pen strokes and backhand slant than in making centrifugal strokes and a forehand script. Drever (29, 30, 31) used a special stylus connected to a tambour to record grip-pressure, although the weight of it distorted the naturalness of the writing to a certain extent. Researches in the movements involved in writing were continued by Freeman (38). Allport and Vernon (1), and later Pascal (87), studied point-pressure in writing through the use of pressure-tables. Quinan (93) contrasted the speed of writing in normals and de-

mentia paralytics, as well as the lateral thrust in writing as indicated along the base line of the text and in the *t* crossings.

The introduction of the electromyogram into handwriting research permits a further refinement in the study of the movements. Ruesch, Finesinger, and Schwab (102), in the first work of this kind, studied the records of the flexor and extensor muscles of the wrist during the writing of a standardized story. They distinguished schematic patterns in their records on the basis of the lengths and groupings of the "spikes" on the graphs. This method applied to analysis of the muscle movements in the fingers, also, and combined with extensive personality study might prove of significant experimental value in the study of personality.

In surveying the research in graphology, one is impressed by the quantity of effort that has already been spent in this direction, but still more by the many areas as yet only briefly investigated in a scientific fashion. For example, only a start has been made in describing the writing characteristics in various clinical groups and psychosomatic disorders. On another level, extensive experimentation remains to be accomplished on the physiological activities and accompaniments of the handwriting movement. This topic provides an admirable meeting point for the laboratory and clinical approaches to psychology. Such a liaison may yet confirm the confidence of so many in the singular value of graphology as a personality measure.

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CHAPTER XV

MIRA MYOKINETIC PSYCHODIAGNOSIS

EMILIO MIRA of Buenos Aires, has proposed and made preliminary investigation of a projective device that combines some of the features of graphology and some of the other expressive muscular movements. His approach is based upon the theory that each subject must have, in a given moment, a particular set of movements more capable of being elicited than all others. This theory is an inference from the observation of Cheuvreuil in 1828 that merely the image of the movement of a "pendulum" is sufficient to start that movement in the body unconsciously. Therefore, if we discover certain individual trends toward movement in a subject we may presume that there is some conative factor motivating the movement. Consequently, Mira set up his experiment to measure movement in all possible spatial directions, in order to discover the predominant set of the movements, as indicated by better execution in the conated direction and hindrance in the opposite directions. If such sets were found to be constant in a person, then the differences between individuals might be regarded as habitual attitudes of reactions.

The material for the test consists of a square or rectangular table, a chair, a wooden board, 15" x 12", three sharpened pencils, a box of drawing pins, six sheets of paper, 12" x 8½", a handkerchief for blindfolding, or a rectangular screen to be placed between the subject and the paper, and a metric ruler.

The instructions are detailed and must be followed carefully. The subject is seated comfortably at the table in front of the board which has its edges placed parallel to the sides of the table. The subject's nose should point straight at the paper, and this position should not be changed. The subject is told:

Part I

"I am going to ask you to draw some lines in order to detect the accuracy of your movements. Hold this pencil with your right hand and draw ten lines like this one (the examiner draws a horizontal line 5 cm. long going from left to right with his pencil). Before you start, I must tell you that you are to try to draw all of them the same length, parallel, and as close as possible to one another, starting and ending on the same level, like this (the experimenter draws two lines, one beneath the other, below the model, trying to keep them as equal as possible). You are not allowed to draw these lines as if you were writing, resting your wrist on the table. Your hand must be free and should be moved loosely, with its movement directed by the forearm just as I am showing you now (the tester imitates the movement he is asking for)."

Before the subject starts, the tester continues: "Of course, it would be very easy for you to do just as I have told you, but in order to increase the difficulty you are not allowed to see what you are doing. So I will blindfold you with this handkerchief (or, interpose this screen between your eyes and your hand) and you have to keep on drawing guided merely by your feelings and without any possibility of visual control." Once this has been done the tester must guide the hand of the subject to the proper point where he should start to draw. The examiner repeats: "Remember you will draw the lines from left to right, one beneath the other, and as close, equal, and parallel as possible."¹

After completion of the ten lines drawn from left to right with the right hand, he draws ten lines more, going in the opposite direction. The third step is a repetition of the first two sets of drawings with the left hand, starting from the right to the left and finishing from the left to the right. During each of these experiments, and the ones following, the examiner must watch carefully to avoid any omission in the observance of instructions, and for the order in which the lines are drawn, which must be recalled and recorded. A record of the time in all parts of the total test must be made.

After the above group of drawings, the board is turned around so that the unused portion of the paper is at the top. Now the subject is to draw lines, each 2" in length in the sagittal plane, i.e., perpendicular to the lower edge of the paper, ten lines outwards

¹ E. Mira, Myokinetic psychodiagnosis: a new technique for exploring the conative trends of personality, *Proc. roy. Soc. Med.*, 33 (1940), 174. By permission.

and ten lines inwards, or, as interpreted by most subjects, upwards and downwards. For sake of comfort, the lines are drawn on the right side of the paper with the right hand, and on the left side with the left hand. These lines are to be drawn one on top of the other and of equal length so that the final result appears as a single line. The screen is kept in place during the experiment. The examiner must record, during the process, the order of drawing the lines, especially 1, 2, 9, and 10.

With a new sheet of paper affixed to the board, which is now placed in the *vertical* plane, the subject is requested to draw with each hand verticals, ten going up and ten, down. Each of the lines is to be drawn one on top of the other and of equal length. In order to keep the board steady, the subject and the examiner support it with their free hands. The examiner draws a model and requests the subject to make all others of the same length. A rest of about five minutes follows.

Part II

The second part of the test consists in drawing some simple combinations of straight and circular lines in the sagittal and vertical planes in order to check upon the results obtained in the first part and to learn something of the peculiarities of conation observed during the execution of combined movements.

First the subject is requested to continue with both hands simultaneously two zigzag lines which are drawn on the upper edge of the paper. The drawing is to be inwards (usually interpreted as downwards) with a pencil in each hand. The model lines are 1" in length with an angle of separation of 10° (see Fig. 3, Illustration A). Once the subject has reached half the sheet, the paper is reversed and the zigzag lines are drawn upwards from the middle of the paper.

With the paper turned over, the subject draws a chain (Fig. 3, Illustration B). Four illustrative circles $3/10''$ in diameter, each intersecting in a chain form, serve as a model. The board is centered according to the axis of the forearm for this experiment, so that the length of the paper lies across the table in front of the hand, and each hand draws in succession. The subject is instructed to go from the bottom toward the top of the paper.

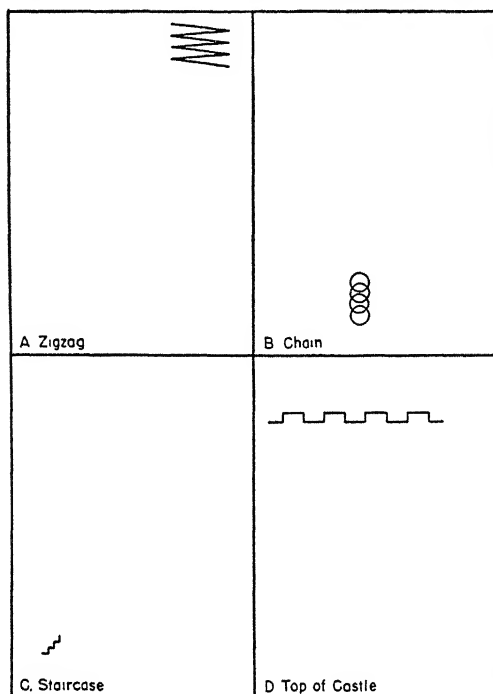


FIG. 3. MODELS DRAWN BY EXAMINER IN MIRA MYOKINETIC PSYCHODIAGNOSIS (approx. $\frac{1}{7}$ th size).

This means that the hand is moving in a horizontal direction, producing chains on the length of the paper. When the arm has deviated approximately 30° from the initial position, the subject is instructed to reverse and go down toward the bottom of the paper over the chain just previously drawn.

The "chain" test is also accomplished in a similar manner with the board in the vertical plane, with the subject drawing first upwards and then downwards.

After a rest period, the subject draws a staircase (Fig. 3, Illustration C) with the board in the same position as for the last experiment, the vertical position. Each of the steps is $\frac{1}{10}$ " in height and length. The examiner first draws three steps as a

model and then the subject continues, first going up and then down, from left to right with the right hand, and from right to left with the left hand. The staircases are then drawn in the opposite directions with each hand.

The final test is the drawing of the top of a castle with four battlements (Fig. 3, Illustration D) in a horizontal direction, first with the right hand from left to right, then with the left hand from right to left, third with the right hand from right to left, and finally with the left hand from left to right. The hand and elbow must be kept off the table at all times, and, as is usual, the time recorded.

In special cases, and in order to make clear some doubtful results, other tests can be used, such as the drawing of spirals, the drawing of circles on top of each other, and the drawing of lines followed by crossing them in the middle. (This last procedure, specially useful for checking the results obtained in the sagittal and the vertical planes, allows a better understanding of the raw and sometimes contradictory results that may be obtained if only the first part of the examination is made in unstable psychopaths.)²

EVALUATION

Evaluation is both quantitative and qualitative. The following characteristics are measured in the quantitative evaluation of Part I of the experiment: 1. the length of the lines; 2. the average length corresponding to each hand and all together; 3. the variability of these lengths; 4. the sense and amount of general variation of the length of lines corresponding to each hand. General variation is obtained by adding all the differences between the lengths of the lines and the lengths of the models—*absolute variation* is the total of the differences summed arithmetically (i.e., disregarding the signs); *relative variation* is the total arrived at by summing algebraically (i.e., taking into account the positive and negative signs of the differences). *Sense* refers to the total number of lines which are longer and the total number which are shorter than the model. If the former is bigger than the latter we have a positive (increasing) sense of variation; if smaller, a negative (decreasing) sense of variation. 5. The absolute and

² Mira, *op. cit.*, p. 179. By permission.

relative shiftings of each sequence of ten lines. In order to calculate these measures, it is necessary to find the middle point of the first line drawn in each series. A perpendicular to the line is then drawn at this point. Then, the distances from the center of each of the other lines to that perpendicular is calculated in millimeters, thus getting nine numbers which will be considered as positive if they are on the side of the perpendicular that corresponds to the suggested direction of movement, and as negative if on the opposite side. If these nine numbers are added arithmetically and averaged we get the amount of the *absolute shifting* of the given sequence of lines. If these numbers are added algebraically and averaged, we will know the sense and the amount of the corresponding *relative shifting*. 6. *The corrected averages of these shiftings* as compared with those that should occur if the subject were to keep the length and the separation of the lines according to the instructions. 7. *The coefficient of coherence* of the measures, which is to be obtained by dividing the average of the relative shiftings by the average of the absolute shiftings.

Among the qualitative data (which in some respects could also be submitted to quantitative expression) we include the following: (a) the straightness of lines; (b) their load; (c) their regularity, considered from the point of view of their orientation in space and of their general appearance.

These qualitative elements are of primary importance in the second part of the Myokinetic Psychodiagnosis where figures and shapes must be considered. In these materials it is possible to detect, in addition to all the measures and data already mentioned, more psychological expression of the subject: personality; the care, meticulousness, or disregard with which the performance has been made; its gracefulness or, on the contrary, its clumsiness, and some other trends of character may be revealed in this way.³

In a series of tables giving scores for each individual case, Mira reported the results with 144 cases, the majority of whom were retested, including normals, epileptics, depressed, anxious depressed, schizophrenic, elated, psychopaths, obsessed, suicidal, and organic. These tables have been condensed here into a table of averages, as found in Table XV.

³ Mira, *op. cit.*, p. 179. By permission.

TABLE XV

AVERAGE ABSOLUTE SHIFTINGS AND AVERAGE RELATIVE SHIFTINGS FOR EACH SERIES, TOTAL AVERAGE SHIFTINGS, AND AVERAGE LENGTH OF LINES IN NORMALS AND NINE CLINICAL GROUPS.
(Adapted from Mira, 1).

CLINICAL CATEGORY	HORIZONTALS							
	L		R		L		R	
	∠ Abs.	∠ Rel.	∠ Abs.	∠ Rel.	7 Abs.	7 Rel.	7 Abs.	7 Rel.
<i>Normals</i>								
Males (17 cases)	8.2	-5.8	7.8	7.1	4.7	3	7.9	3.6
Females (18 cases)	9	-2.1	7.1	1.4	5.4	-0.3	7.2	4
<i>Epileptics</i>								
Males (13 cases)	9.8	-5.4	9.6	7.6	10.6	8.7	8.5	3.5
Females (19 cases)	6.5	-3.6	8.3	3.2	11.5	8.6	11.1	7.6
<i>Obsessed</i> (6 cases)	5.3	-6.0	9.7	-1.4	22.2	22.2	13.2	13.2
<i>Agitated</i>								
Depression (12 cases)	8.1	-1.9	10.7	7.9	12.6	6.5	10.4	8
<i>Retarded</i>								
Depression (16 cases)	12.5	-8.7	13.2	7.0	17.9	15.2	11.7	7.5
<i>Suicidal</i> (8 cases)	11.3	-5.8	8.3	6.3	13.7	13.4	12.0	9.7
<i>Schizophrenic</i> (16 cases)	13.2	-2.6	8.8	4.5	9.4	6.5	11.0	5.3
<i>Elated</i> (7 cases)	4.8	-0.6	9.6	6.2	7.5	-1.6	7.3	3.9
<i>Psychopathic</i>								
Personality (7 cases)	11.3	7.6	15.0	10.5	16.0	9.9	10.4	6.9
<i>Organic</i> (5 cases)	10.2	6.5	9.4	8.3	13.7	-2.8	11.1	8.5

TABLE XV—(Continued)

AVERAGE ABSOLUTE SHIFTINGS AND AVERAGE RELATIVE SHIFTINGS FOR EACH SERIES, TOTAL AVERAGE SHIFTINGS, AND AVERAGE LENGTH OF LINES IN NORMALS AND NINE CLINICAL GROUPS—(Continued).
(Adapted from Mira 1).

CLINICAL CATEGORY	SAGITTALS							
	L		R		L		R	
	↘ Abs.	↘ Rel.	↘ Abs.	↘ Rel.	↘ Abs.	↘ Rel.	↘ Abs.	↘ Rel.
<i>Normals</i>								
Males (17 cases)	5.8		5.4		6.1		6.1	
		-0.7		4		0.1		4.5
Females (18 cases)	5.8		3.5		6.3		4.8	
		-2.7		-1.6		0.7		-11.2
<i>Epileptics</i>								
Males (13 cases)	8.6		7.5		9		10.2	
		5.5		6.3		-0.4		1.5
Females (19 cases)	6.2		6.8		8.7		8.6	
		-0.01		-1.3		2.0		7.3
<i>Obsessed</i> (6 cases)	11.8		10.3		8.3		11.3	
		11.8		-2.1		4.9		8.3
<i>Agitated</i>								
<i>Depression</i> (12 cases)	9.7		8.6		10.5		11.7	
		1.1		2.9		3.1		10.8
<i>Retarded</i>								
<i>Depression</i> (16 cases)	11.9		10.8		6.2		9.8	
		10.4		9.8		-2.6		2.9
<i>Suicidal</i> (8 cases)	20.3		14.4		6.0		9.3	
		20.3		14.4		0.5		8.1
<i>Schizophrenic</i> (16 cases)	11.4		9.9		9.2		8.0	
		7.8		6.8		2.5		2.6
<i>Elated</i> (7 cases)	4.8		2.3		13.7		12.1	
		-0.04		-0.9		13.7		12.1
<i>Psychopathic</i>								
<i>Personality</i> (7 cases)	9.9		5.1		9.9		9.4	
		4.8		0.6		7.5		9.1
<i>Organic</i> (5 cases)	5.4		5.9		7.9		9.1	
		2.0		-0.9		-1.1		6.2

TABLE XV—(Continued)

AVERAGE ABSOLUTE SHIFTINGS AND AVERAGE RELATIVE SHIFTINGS FOR EACH SERIES, TOTAL AVERAGE SHIFTINGS, AND AVERAGE LENGTH OF LINES IN NORMALS AND NINE CLINICAL GROUPS—(Continued).
(Adapted from Mira 1).

CLINICAL CATEGORY	VERTICALS							
	L		R		L		R	
	↘	↙	↘	↙	↘	↙	↘	↙
	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.	Abs.	Rel.
<i>Normals</i>								
Males								
(17 cases)	3.9		5.9		6.2		5.7	
		-2.6		-3.6		4.1		-0.7
Females								
(18 cases)	5.2		5.0		5.8		5.8	
		0.1		-0.3		1.6		-1.1
<i>Epileptics</i>								
Males								
(18 cases)	12.0		11.0		10.6		10.4	
		9.2		10.0		6.5		2.7
Females								
(19 cases)	7.8		6.5		10.7		7.8	
		1.4		-0.5		6.7		2.1
<i>Obsessed</i>								
(6 cases)	8.4		7.7		6.7		8.0	
		0.8		2.4		3.7		-2.7
<i>Agitated</i>								
Depression								
(12 cases)	14.3		12.4		9.4		8.8	
		11.7		9.2		2.3		4.4
<i>Retarded</i>								
Depression								
(16 cases)	14.1		18.1		8.4		12.3	
		11.3		18.1		-7.0		-10.9
<i>Suicidal</i>								
(8 cases)	28.3		16.2		9.0		13.6	
		28.3		16.2		6.8		-5.4
<i>Schizophrenic</i>								
(16 cases)	10.5		8.9		8.8		8.4	
		6.7		7.8		5.6		2.1
<i>Elated</i>								
(7 cases)	4.2		7.9		23.9		12.3	
		-3.1		-7.9		23.9		12.3
<i>Psychopathic</i>								
Personality								
(7 cases)	7.7		10.6		14.1		15.7	
		6.3		2.6		10.0		15.7
<i>Organic</i>								
(5 cases)	4.5		8.3		8.7		8.8	
		-3.5		2.2		3.0		5.0

TABLE XV—(Continued)

AVERAGE ABSOLUTE SHIFTINGS AND AVERAGE RELATIVE SHIFTINGS FOR EACH SERIES, TOTAL AVERAGE SHIFTINGS, AND AVERAGE LENGTH OF LINES IN NORMALS AND NINE CLINICAL GROUPS—(Continued)
(Adapted from Mira 1).

CLINICAL CATEGORY	AVERAGES				AVERAGE LENGTH OF LINES		C.R.			C.C,
	L		R		L	R	L	R	Avg	
	Abs.	Rel.	Abs.	Rel.						
<i>Normals</i>										
Males							.88	.73	.80	.35 (M)
(17 cases)	5.8		6.5		48.3	43.6				
		-1.9		2.5						
Females										.054 (F)
(18 cases)	6.2		5.5		45.1	40.43				
		-0.45		0.2						
<i>Epileptics</i>										
Males							.84	.76		.45
(13 cases)	10.1		9.6							
		4.0		5.3						
Females										
(19 cases)	8.7		8.2							
		2.5		3.1						
<i>Obsessed</i>										
(6 cases)	10.4		10.03		63.2	44.3			.87	.64
		8.22		5.0						
<i>Agitated</i>										
<i>Depression</i>										
(12 cases)	10.8		10.44		66.39	70.55				.49
		3.47		7.2						
<i>Retarded</i>										
<i>Depression</i>										
(16 cases)	12.0		13.0		45.21					.86
		3.1		5.7						
<i>Suicidal</i>										
(8 cases)	14.77		12.30							.69
		10.57		8.2						
<i>Schizophrenic</i>										
(16 cases)	10.4		9.1							.47
		4.4		4.7						
<i>Elated</i>										
(7 cases)	9.8		8.6		98.85	82.15				.80
		7.6		7.2						
<i>Psychopathic</i>										
<i>Personality</i>										
(7 cases)	11.46		11.01							.68
		7.66		7.56						
<i>Organic</i>										
(5 cases)	8.4		8.8		69.05	86.5				.48
		0.7		4.9						

C.R. = Coefficient of Reliability

C.C. = Coefficient of Coherence

The significance of several of these scores will be indicated by a tabulation of some of the important observations made by Mira:

Normals:

1. Absolute and relative shiftings of both hands are practically equal, although the majority complain about their inability to control their left hands.
2. The small coefficients of coherence indicate a wide mixture of personalities in the group, with conative trends in some individuals compensating for those in others.
3. The coefficients of reliability indicate that each hand is shifting and behaving under different trends, those of the right being more in-constant.

Epileptics:

1. Difference in the left hand values is especially remarkable in the horizontal lines; those of the right hand, in the vertical lines (probably owing to the effect of the luminal treatment).
2. There is a clear tendency to a *positive* variation of the length of lines in this group (not shown in Table XV), especially in the vertical lines.
3. Difference in the load of the lines is remarkable in certain cases, those of the left hand showing sometimes a normal strength.
4. The majority of patients fail to draw the staircase from right to left, especially with the left hand.

Obsessed:

1. Too few cases for conclusions.

Agitated Depressed:

1. The coefficient of coherence indicates it is a homogeneous group.
2. Highly positive shiftings on lines going down on vertical plane; highly negative shifting on lines going up on same plane.
3. Accuracy and speed of descendant movements is greater than in ascendant. The intensity of such differences closely corresponds to the intensity of the depression. This is confirmed by the fact that the average shiftings in the vertical lines of the *suicidal* patients are definitely bigger than those of the non-suicidal.

Schizophrenic:

Three clear things are found in almost all cases: (a) a tendency to lose the direction of the initial movement; (b) a tendency to reverse the movement itself; and (c) the clumsiness of the drawing shapes.

Elated:

1. Staircase, chain and top of castle drawings in the vertical plane indicate how outgoing (ascendant) movements are facilitated in this group of patients.
2. The length of the lines is almost twice that of the depressed group.
3. Positive shifting in the verticals going up is much greater in the left than in the right hand, while the reverse happens with the verticals going down in the depressed group. As the left hand is subject to much less conscious control than the right, this fact seems to point out that elated patients try to repress their elations more than the depressed try to conceal their depression.

Psychopathic Personalities:

1. All the relative shiftings are positive, including those of the left hand moving horizontally from right to left, negative in all other groups except in the small group of organics, who have negative relative shifting in some movements.
2. Absolute shiftings are bigger in the right hand than in the left hand.

Organic:

Too few cases.

Some significant major conclusions are that: 1. the expected difference in psychomotor energy between depressed and elated patients, as evidenced by the movements against the action of gravity, is clearly shown by the contrast between the ascendant and descendant movements in the vertical plane in the two groups. 2. Evidence is strong, though not conclusive, that the left hand is more related to the constitutional trends in the personality, and the right hand to what is actually present in the mind (cf. Wolff (4, 5) and Luria (1)). Thus the constitutional depressed have more of a tendency to move downward with the left hand than those whose previous personality was rather full of psychomotor energy. 3. Movements in the sagittal plane seem to correspond closely to the amount of auto- and hetero-aggression shown by the individual. Therefore, in a given individual oscillations of his shiftings in the sagittal direction can give account of the variations of what we could call his "vital space of direct action," i.e., the expansion or retraction of the zone in which he is trying to act. 4. The interpretations of the horizontal shiftings are more complicated and, as yet, Mira can offer no suitable explanation for them.

Mira's technique has been summarized at length here because of the relative simplicity of its use, because it takes only a short time to administer (30 minutes on the average), and because the equipment needed is easy to procure, thus making it a practical technique for diagnostic use. Of course, in its present state of development, its results are so tentative that it cannot be applied immediately for discrimination between clinical groups or for analysis of the structure of the personality in individual cases. Standardized experiments with the technique should be relatively easy to develop. Since the major analysis of the results is objective and quantitative, comparison of the results of its use by various experimenters should be possible. This suggests that the accumulation of sufficient records in the various clinical groups to measure the validity of the instrument could be obtained by cooperative effort, and might prove extremely profitable.

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CHAPTER XVI

VISUAL-MOTOR TESTS

THE REPRODUCTION of designs, whether from memory or from copy, is not a new procedure in psychological experimentation or testing. The Gestaltists in their studies in the field of perception made frequent use of this technique. Binet included the reproduction of two designs in his intelligence test. Ellis used these two Binet designs and eight others in an expanded visual-memory test. In both the Binet and Ellis tests the designs were exposed for a brief period after which the subject was asked to reproduce them. While these are not new methods, their use in personality testing is of recent origin.

The first personality test to be based upon visual-motor methods was developed by Bender (1), and has become known as the Bender Visual-Motor Gestalt Test. Bender used figures first suggested by Wertheimer (8) as the material for her test (reproduced in Fig. 4). Her use of these figures as a test procedure was based upon extensive research into the ability of children and adults with various personality disorders to reproduce these figures. Bender used both full exposure and tachistoscopic exposure during drawing in her experiments.

The evaluation of the drawings was made on the basis of the movements involved, the perceptions implied by the figures drawn, the characteristics of the drawings themselves, and associated behavior. Bender's criteria for evaluation as implicit in her monograph might be classified as follows:

1. The movements used in constructing the figures as characterized by:
 - (a) speed;
 - (b) rhythm;
 - (c) direction;
 - (d) perseveration;
 - (e) simplicity; and
 - (f) elaboration.

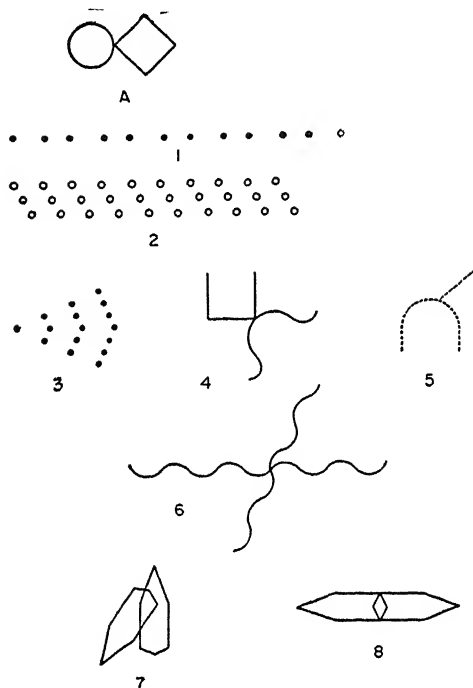


FIG. 4. FORMS FOR THE BENDER VISUAL-MOTOR GESTALT TEST.¹

2. The form of the completed figure as evidenced in:
 - (a) the outline, which may be:
 - i. sharp;
 - ii. hazy;
 - (b) the organization of the figure:
 - i. a precise reproduction of the test figures;
 - ii. perception of the whole accurately with inaccuracies in details;
 - iii. accurate representation of the parts but failure to integrate them into an adequate whole;
 - (c) the spatial orientation:
 - i. rotation of the whole figure;
 - ii. rotation of part of the figure;
 - iii. separation of parts of the figures;
 - iv. accentuation of the horizontal plane;

¹ L. Bender, A visual motor Gestalt test and its clinical use, *Res. Monogr Amer. Orthopsychiat. Ass.*, no. 3 (1938), Plate 1, p. 4. By permission.

- (d) the differentiation of the forms:
 - i. failure in differentiation—e.g. scribbling;
 - ii. substitutions and modifications—e.g. loops for dots; radial directional movement for straight lines; numbers or letters in place of dots or circles; wavy lines for dotted lines;
 - iii. elaboration;
- (e) perseveration:
 - i. in strokes used in constructing the drawings;
 - ii. in representations of successive figures;
- (f) size:
 - i. macrographia;
 - ii. same as model;
 - iii. micrographia;
- (g) avoidances:
 - i. of crossing;
 - ii. of angulated forms.

Associated behavior:

- (a) free associations to the figures;
- (b) evidences of disapproval or approval of the figures as drawn.

Bender found that young *children* from 2½ to 4 years of age first show scribbling behavior, either in the form of whirls or pendulumlike movements, the direction determined by the handedness—dextrad, clockwise if the child uses the right hand, and sinistrad, counterclockwise if the child uses the left hand. This is followed by the development of single closed loops or parts of loops which may resemble or represent symbolically the perceived form. If a child is taught a new figure, he will tend to persevere this figure in response to later drawing tasks. From 4 to 7 years the differentiation of form is rapid; the older, well-adjusted, and superior child in this age bracket may approach the standard of the adult in his reproductions.

Low-grade defectives were found to use looped forms as do children. They show especial difficulties with parallel lines, angulated forms, and crossed forms because of their tendency to reproduce fixed points as looped forms and the straight line as a function of a radial, directional wave movement rather than as a function of two fixed points.

In *organic* conditions the drawings assume forms characteristic of the area and extent of brain damage. It is in the diagnosis of organic conditions that the Visual-Motor Gestalt Test serves

most effectively. Bender noticed that in dementia paralytica the drawings show a stilted, excessively careful perfection that tends to be formalistic and to lack any personal interest, while at the same time there are nearly always some evidences of reversions to primitive tendencies or to the use of telltale features such as numbers or letters in place of dots or circles. In the alcoholic psychoses the following patterns were revealed:

- (a) severe alcoholic encephalopathies: incompletely perceived Gestalten; perseveration of strokes;
- (b) Korsakoff syndrome: perseveration of motor impulses or rhythmic movement;
- (c) chronic alcoholic hallucinatory states: Gestalt well perceived, but outlines hazy;
- (d) confusional states: disturbances of integration of the parts into the whole and of orientation of the figure on the background.

In the traumatic psychoses the acute and chronic stages show different performances. In the acute confusional stage following trauma there is a reversion to primitive features and confusional features such as described under (d) above. In the chronic Korsakoff syndrome following trauma, there is retention of the configuration as a whole, proper orientation of the figure on the background, with some reversion to primitive responses and modifications or substitutions in parts of the figures.

In *schizophrenic* patients Bender found evidences of dissociations in the Gestalt figures, shown by (a) a change in the rate or direction of the movement in part or all of the figure; and (b) disorientation or spatial separation of a part of the figure by movement in the radial direction on a horizontal plane or rotary or vortical movement to an angle of 45°. Tendencies to perseveration, carry-over from one picture to the other; changing dots to loops; fragmentation; representing dotted lines as wavy lines; micropsia; accentuation of horizontal planes; avoiding crossing and angulated forms; and failure to integrate the whole configuration or to properly relate some one or more parts to the whole were observed.

Depressive patients were found to draw with compulsive precision and to be dissatisfied with the results; *manic*, with elaborations (motor or verbal) which do not destroy the primary Gestalt.

While the Bender test has been widely used, especially in military service, published references to test findings are infrequent. Apart from the monograph by Bender, the most complete treatment of the test has been reported by Billingslea (2). Fabian (5) has also used the test figures along with others in evaluating the tendencies of children to rotate figures in perception, a characteristic of small children normally outgrown by 7 or 8 years of age, and having an important relationship to reading problems.

A test of somewhat similar nature, the Ellis Visual Designs Test (Fig. 5), has proven of comparable value to the Bender test

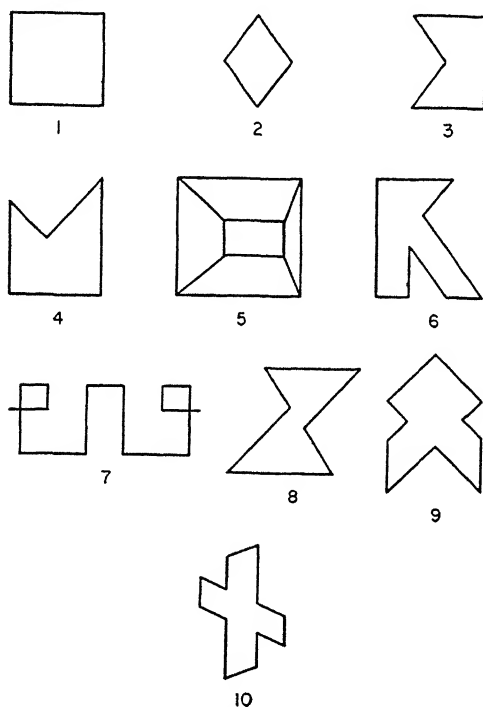


FIG. 5. THE ELLIS VISUAL DESIGNS TEST.²

in the diagnosis of organic conditions. The first report of the Ellis Visual Designs Test appeared in 1927 (3) when it was suggested as a method of testing the visual-memory aspect of intelligence.

² L. Wood and E. Shulman, The Ellis visual designs test, *J. educ. Psychol.*, 36 (1940), Fig. 1, p. 592. By permission.

It was not standardized or evaluated extensively until 1940, when Wood and Shulman (10) studied the test results of 1646 subjects ranging from 8.6 to 17.6 years of age. Wood and Shulman exposed each figure for 5 seconds and asked their subjects to "draw it just like the picture." They scored the test by allowing one point for each correct drawing; a half a point "for each design containing only one error or two errors which are symmetrically consistent. Reversing, inverting, or turning the design on a ninety degree angle is considered one error. Two or more errors score zero." The total of scores on each figure provides the final score.

This standardized method was applied by Lord and Wood in two separate studies reported together (6). In the first, by Lord, it was noted that children with good I.Q. (above 85) and with known organic conditions frequently failed to secure a score above 3.5 on the Ellis test. This score represented the point below which fell 25 per cent of the scores of the lowest age group studied by Wood and Shulman (8.6 to 9.5 years). In contrast to the results achieved by children with various types of organic defect, a dozen of the children most seriously disturbed emotionally did not show this form of irregularity. Wood described 10 cases in which she discovered a "good" IQ combined with a low Ellis score. While the initial physical examination had proven negative, later evidence seemed to support the contention of the psychologist that in each of these cases an organic deficiency was present. Lord and Wood conclude: "Extreme deviation from the norm in the visuo-motor field seems to be a psychological entity of real significance for child guidance. In such cases of probable mild brain damage the usual neurological signs are frequently absent. Consequently the psychological findings must be relied upon as chief aid to diagnosis."

A preliminary report on another type of drawing task in many respects similar to the Bender and Ellis tests was given by Wolff (9). He entitled his method "Graphometry" and proposed it as a new diagnostic method. In his experimentation he asked the subjects to draw a set of 6 simple geometrical forms under four conditions: 1. with the eyes closed and with the right hand; 2. with the eyes closed and with the left hand; 3. with the eyes open and with the right hand; and 4. with the eyes open and with

the left hand. The drawings were repeated three times at three-day intervals. Consistency in the average proportion of the forms was noted in 50 per cent of the cases in the first two sessions. In the third session the subjects were asked to break down their own consistency. In spite of these attempts to alter the proportions, 59 per cent of the forms were consistent with the others produced in the same session under the different conditions. This consistency suggested that forms drawn under such conditions were reliably related to the personalities of the subjects and might offer diagnostic possibilities similar to handwriting but easier to analyze.

A related procedure, the adaptation of the Terman Ball and Field Test to personality diagnosis was examined by Bühler (4). In this test the child is presented with a circle about 2½ inches in diameter, which he is told represents a field in which a ball is lost. He is asked to trace the path he would follow in hunting for the ball. Bühler classified the responses as normal, confused (blind running here and there), formalistic (filling every corner of the field by painful accuracy), and involved (using curves and hooks to produce a picture much like an embroidery design). Seventy-eight per cent of the confused, formalistic, and involved patterns were produced by children with emotional problems, 20 per cent by those who failed to understand the task, and only 2 per cent by completely normal and average children.

A further formal type of drawing task of clinical significance has been proposed by Wechsler and Hartogs (7). Their test, evaluated with about 300 subjects, involves mirror drawing and consists of two tasks. In the first part, the subject is asked to draw a straight line between two points on a paper which is only indirectly visible in a mirror. The subject may observe his drawing in the mirror as he works. In the second part, the subject joins five points successively by mirror drawing, is shown a sixth point toward which he is to draw, and proceeds to draw with a screen interposed between himself and the mirror. After the subject has attempted to reach point six, the examiner places the point of the subject's pencil on point six, reveals a seventh point in the mirror and then again covers the mirror while the subject tries to reach this point. The authors scored the test for time,

distance covered, presence of graphomotor block (dense mass of abortive pencil strokes within a small area), presence of graphomotor complex (less dense variant of block), segmentation (interruptions, stops, cuts, and breaks), spread, field distribution, pencil pressure, atactic disturbances, comparison of mirror performances with blind drawings, and comparisons between a test and a retest. Wechsler and Hartogs were of the opinion that disruptions in performance from a standard of a rapid and easy completion of the drawings indicated the presence of anxiety and something of its intensity. Other suggested traits that might be shown were aggression, impulsivity, and feelings of insufficiency. The tabulation and validation of the characteristics of the mirror drawings have not yet been published, but several cases used as illustrations of their findings indicate that the simple procedure has considerable sensitivity.

The common characteristic of the various procedures mentioned above is the performance of a fixed drawing task combining perceptual and motor activity. The results of these procedures all indicate the diagnostic values of such tasks, although no single procedure, with the possible exception of the Bender Test, has reached the required standards of a clinical test. The potential advantages of these methods is in their rapidity, in their tapping of two major aspects of the personality, the perceptual capacities and the motor activity, and in their similarity to test procedures now in common use in psychological diagnosis permitting inclusion of these methods within other tests in a natural and non-disrupting fashion. Their weakness, by no means insuperable, is in the limited evidence of validity and reliability as yet accumulated.

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CHAPTER XVII

DRAWING, PAINTING, AND OTHER ARTS

AMONG the articles in the earliest volumes of psychological and educational journals are those dealing with children's art. In volumes 2, 3, and 4 of the *Pedagogical Seminary*, now the *Journal of Genetic Psychology*, Barnes (11), Herrick (76), and Lukens (105) describe studies of children's drawings which they made during the 1890's. Burk (34) in 1902, in the same journal discusses the contrast in art education between following the order dictated by the child's growth and a more logical development. Each of these articles has a modern ring, as do many of the other early descriptions of artwork among children (16, 25, 26, 32, 39, 61, 77, 110, 137, 138, 143, 147, 148). As the psychology of art has grown, certain trends have made themselves manifest, most of which will be mentioned briefly in this context since they form only the background against which to evaluate the use of drawing in diagnosis.

One of the most important background areas is the study of the different chronological stages in the development of art, of the activities characteristic of certain age levels, and of the meaning of art expression to the individual at different ages. In general, the following stages seem to be distinguished (104, 161):

A. *The Scribbling Stage:*

1. *Random dots and dashes.* Wolff (180) claims that even in these random expressions pressure, speed, regularity, rhythm, direction, narrowness or breadth are characteristic of the individual.
2. *Discovery of the line technique*, accompanying development in strength and control.
3. *The lateral whirl.* Krautter (91) claims this to be the product of motor impulses, as described by Fabian (58), and also by Bender, who points out that vertical rotation is a more fundamental motion for the child than horizontal movement, as illus-

trated by his sidewalk drawings and games (17) and by his early manipulation of plastic materials (with Woltmann, 22). The lateral whirl reflects, in graphic motion, the body-image of the child in his development of space orientation.

4. *Circular-tending forms*, as rhythm becomes freer and more expansive. Both true circles and angular circles may be distinguished and are developments from the lateral whirl.
5. *Sloughing off meaningless lines*, as the conscious control by the child increases.

B. *Subjective Representation:*

1. *Drawing of the human face*—crude attempts frequently combined with:
2. Crude representations of the human form as a *stick-man*. At this stage there may be difficulty in placing the arms and legs and in controlling the number of fingers and limbs. Evolution to the point where discrepancies disappear normally takes a year (usually from four to five years of age). Even after this period there may be proportional misrepresentations, interpreted by Lowenfeld (103, 104) and Wolff (180) as deviations according to the value placed on the particular body-area by the child, rather than as visual representations.
3. Once the stick-man is mastered there is an *outburst of creation and rapid development of skill*. By five to six years the normal child can depict almost any simple object in a crude but recognizable way. Sex differences and racial differences begin to show at this stage.
4. Increasing concern with *reproducing what is seen* rather than what is felt, reaching a transitional peak by the age of nine (2), leading to the next stage.

C. *Realistic Representation:*

1. A decrease in self-expression accompanying increasing awareness of the world, "organismic and social conservatism" (85), and the development of written language, especially noticeable between eight and ten years. This frequently terminates drawing activity in the individual, although continuance of subjective representation is manifest in abstract drawing (154). Hurlock (83) discovered four favored forms of spontaneous drawing in adolescents: decoratively printed words, caricatures, human forms, and conventional designs.

Analyses of the genetic stages in drawing have led to the use of drawing as a measure of intelligence. The best known of the tests is the Goodenough Drawing Scale, described by the author (65, 66, 67) and utilized in many studies of ability (e.g., 52, 68,

117, 166, 176, 181) with varying results. Others have contributed findings on the relationship between mental ability and art using varying approaches, some comparable to the Goodenough Test, some widely divergent: the drawings of the gifted child (37, 82), of the subnormal (52, 81, 82, 87, 104, 150, 164, 172), other tests (134, 142, 177), and surveys of the literature (120, 165). A further application of the knowledge of developmental stages included the constructing of tests and other means for measuring art achievement and art ability. One of the earliest of the achievement tests was devised by Thorndike (170) and used in an extensive study by Child (38). Cohen (41), Findley (59), Hurlock and Thomson (84), Knauber (89), and Manuel (112, 113) have contributed to this field. Lewerenz (100) has studied sex differences in art ability.

Another trend in the study of drawing is the determination of the cultural influences upon art (3, 4, 44, 45, 51, 64, 92, 93, 95, 113, 116, 140, 145, 151, 158, 162).

Others, such as Berlinger (23), Bulley (33), and Daniels (43), have investigated the aesthetic judgments of children.

These various types of investigation of art have a preparatory relationship to the use of art as a projective device and a therapeutic technique, which is a relatively recent specialization in the field of art. This use of art will be discussed under two headings: 1. the techniques used in securing specimens of individual artwork; and 2. the methods of interpretation of art, the significance of certain aspects of drawing and art, and their clinical applications.

DRAWING MEDIA AND METHODS

Of the great variations in approach to the drawing itself, two will be reserved for separate consideration, the one a free method of particular value, finger painting, and the other a confining task comparable to the completion of other stimuli, especially verbal, the completion of pictures. A similar range from free to restricted production is found in the consideration here of the large number of other proposals for obtaining art expressions. An attempt has been made to arrange them in order of the amount of control placed upon the subject.

Naturally, many of the studies of drawing have been prompted by spontaneously produced specimens, whether of children or adults. Prinzhorn (144), who assembled a monumental collection of psychotic art, published the most important of the early descriptions of the artwork of maladjusted individuals. His samples were free in content, worked in a great variety of media, and assembled from sources widespread geographically and historically. Born (29), and Anastasi and Foley (7) also secured spontaneously produced specimens from a variety of sources for their more recent studies on the art of mental patients. Schube and Cowell (157) gave a description of the studio at the Boston State Hospital where patients could work in oils, water colors, pastels, clay, charcoal and pencil, choosing their own medium and subject matter. They analyzed the work of 168 patients from a variety of diagnostic groups. Curran (42) describes the similar provision of facilities for artwork with children at Bellevue Hospital where the patients are encouraged to draw anything they wish, and where the artwork produced can be displayed. Lewis (101) collected untutored art from patients for his analysis of the qualities of art forms found in schizophrenia. Guttman and MacLay (71) presented the records of 5 cases along with illustrations of their art in their review of schizophrenic drawing, making forcibly the point that no drawings can be understood apart from knowledge of the patient as a whole.

Free drawing in both group and individual situations has been used for the analysis of children's art. In the psychiatric institutions and wards for children, drawing and other creative work is a routine preoccupation, usually involving not only paints and graphic materials, but also the plastic media. Bender and Rapoport (20) have taken from artwork produced in the studio at Bellevue some specimens which contained animals and have made special analyses of the drawings and of the case records of the artist-patients. In a similar analysis, Bender and Wolfson (21) have carried on research into the nautical theme in children's art. Despert (47-49) has used the free drawing of children as well as various play procedures as aids in diagnosis and catharsis; in some of her studies she has restricted the medium the children may use. Naumberg (127-133), in her case work

at the New York Psychiatric Institute, used art as a supplement to other psychiatric procedures being applied to the children. Although her work was both with groups and with individuals, her detailed and excellent case reports depended chiefly upon individual work in which the patients were encouraged to express imaginatively and freely whatever interested them.

Making capital of the spontaneous artwork of children has not been restricted, however, to workers in the hospital or clinic. The nursery school has proven an especially profitable situation for intensive study of the personality and among the techniques utilized has been drawing, since it is so natural an activity in the nursery-school program. Despert (49) studied normal children in the Payne Whitney Nursery School, confining her analysis to work created with crayons and paper. Lerner, Murphy, *et al* (98) at the Sarah Lawrence College Nursery School have created a great variety of projective devices for use with preschool groups and have analyzed free drawings among others. They also made their records available to Wolff (178-180) who, in addition, studied the art of children in nursery groups in Germany, Spain, and in the United States. The drawings themselves and behavior notes during the artwork ordinarily form the bases for interpretation of preschool materials. For example, Alschuler and Hattwick (2) obtained from their subjects, 150 preschool children in eight nursery groups, painting and crayon products, sketches of block work, photographs of painting, crayon, clay, block and dramatic play, records of choice of and preference for media, records of overt behavior in the school situation and at home, and social and developmental history data.

Elementary and high schools have also provided material for the psychologist to study. Elkisch (54) gathered the products of 8 children over a period of years in the University Elementary School, Ann Arbor, Mich. It would be expected that the formal disciplines of the school classes would place some restrictions upon freedom, although the greater part of Elkisch's materials might be called "free." With rather clever sleuthing, Hurlock (83) uncovered 1451 spontaneous drawings of adolescents by the ruse of collecting notebooks and by carefully examining discarded scraps of paper thrown into wastebaskets and so on. This

method, of course, did not always permit conclusions related to individuals.

Combinations of permitting free expression and requiring the performance of specific tasks is the device used in other research, such as the investigations of Schmidl-Waehner (156) with college students at Sarah Lawrence College, reported by her in another context with Munroe and Lewinson (126) and described also by Munroe (125). Schmidl-Waehner obtained from the students a series of free drawings or paintings and a series of human faces in order: (a) any human face liked; (b) an ugly and a beautiful face; (c) a self-portrait by heart without the assistance of a mirror, and, (d) a group of human figures. In studying adult psychotics Anastasi and Foley (5) obtained four drawings from each of 340 patients and from an equal number of normal control subjects. The drawings were: a free choice, a representation of danger, the picture of a man, and a copy of a stylized floral design. Ruesch and Finesinger (152) provided their subjects with 15 different wax crayons, a pencil, and typing paper, and asked them to draw "sadness" with the pencil, "joy" with the crayons, and then anything they wished.

Permitting an opportunity for free expression within the psychotherapeutic interview brings about a different kind of control upon the drawing—the control by interpretation. John Levy (99) gave his patients a variety of tools and materials: water colors, oil paints, clay, plasticene, finger paints, colored pencils, and soap. The child was allowed to select his own materials and to draw whatever he wished. Following the drawing he was requested to associate to the picture and to attempt an interpretation of its meaning. Levy urged the importance of verbalizing the interpretations of the content, although the art expression by itself tended to be cathartic and to hasten treatment, in particular by tiding a child over periods of negativism. He emphasized that art therapy cannot be used for all patients, and that not all media are equally suitable or cathartic for all cases. The parents of the patient need to cooperate passively for the successful working through of conflicts by art, and manipulation of the environment is well avoided if such therapy is to be applied. An advantage for the therapist in such a procedure is to be found

in the permanency of the art record, which permits a review of the whole course of the therapy. In the case of a superior 8-year-old girl who was in therapy using drawing as a basis, McIntosh and Pickford (119) also secured associations to drawings and discovered that the drawings showed special artistic merit whenever there was a strong conflict unconsciously expressed. McIntosh (118), also, investigated the use of drawing by psychoanalysts. Schaefer-Simmern and Sarason (153) indicated by the case of a 30-year-old feeble-minded female that art may be used even with the dull as a therapeutic method, although in their illustration association and interpretation were not used. In many other cases in the literature of psychiatric treatment references are made to art as a means of communication between the patient and the therapist. Although the patient is almost always given freedom to represent his own interests with the various art media, it is inevitable that where interpretation is used it shapes, to a certain extent, the content, perhaps even the form of the picturization, and maybe even the manipulation of the materials.

Setting a controlled task in the art period is one of the most common tools of the investigator. An example of this method is found in the research of England (56, 57) who gave various children standard drawing paper, 12" x 18", and pencils and asked them to "draw the most important event of your life." The Good-enough Test, used for what it reveals of the personality rather than for what it shows about the intelligence, is the most common instance of this type of approach. The test consists simply of the drawing of a man. Bender (19) assigned this task to a group of chronic encephalitics and made some generalizations about the perceptions upon which such drawings are founded. It was her conclusion that the drawing of the human form is not related to a simple optic-Gestalt but to a more complicated Gestalt which is based upon sensory impressions of all types coming from the surface as well as from the inside of the body and which integrates remembered as well as present sensations. Des Lauriers and Halpern (46) used the test also as a projective device, claiming that it reflected the individual's interest in his own body. As mentioned previously, Wolff (180) assigned special impor-

tance as personality indicators to discrepancies in the drawing of a man. The Goodenough Test was also used by Berrien (24) and Brill (31) as a measure of adjustment. Oakley (135) investigated the characteristics of drawings of a man by adolescents, in order to determine the personal traits of those who drew men well. Children's drawings of houses were found by Kerr (87) to be less variable with age than the drawings of men, but also capable of use as indicators of stability or instability. Earlier, Appel (8) had suggested the drawing of "home," the house where the child lives, as part of a diagnostic interview. He first gave to the child a series of inkblots about which the child associated. The purpose was chiefly to accustom the child to the recording of responses which was done "enthusiastically," indicating the value the interviewer placed upon the associations. Following this he provided the child with typing paper, crayons, or pencils, and asked for the picture of "home," and then, in turn, drawings of his parents, his siblings and their relations to him, parental substitutes such as teachers, his playmates and friends, three wishes, three bags of money, three dreams, and reversal situations such as "what you would do if you were your brother or sister and he or she were you." In order to keep the interview flowing, the physician would draw also, as well as question the patient about aspects of the drawings.

Abel (1) controlled the technique to be used in drawing, rather than the task. She permitted the subject to draw whatever he wished but limited him to the use of 19 straight lines and 6 curved lines, which were to be placed in a longitudinal rectangle of four inches by six inches. She used schizophrenics, normal high-school boys and girls, industrial high-school girls, Navajo Indians, Balinese and subnormal subjects. Taylor (169) investigated language, religious, art training, and place of residence differences in students in a college in Central India with the Abel method.

The most controlled of the art methods are those that restrict both the content and the methods of drawing. Reporting the results of fifteen years of experimentation with the use of drawings diagnostically, Harms (72, 73, 75) outlines three steps in his method, the first exercise of which is technique- and task-

controlled and called "line analysis." This "exercise in abstraction," experimented with earlier by Krauss (90), elicits expressions of a variety of emotions and states portrayed by single lines. One of Harms' lists of stimuli includes the following words: happy, silence, depressed, straight, walking, fighting, singing, cry, fear, laughing, lie, love. After completion of this task, the children then suggest their own words and depict them in a similar fashion. Harms follows this step with the "opening of emotions" in which a list of words of emotion is presented to the child, who selects one and paints it. The kind of emotion the child wanted to express is recorded on the reverse of the paper. The third step, the "fact test," calls for a painting in a realistic way of what has occupied the child most during the emotional tests, followed by painting of concrete topics such as "what you like best," "what you fear most," "a dream," and "school."

Reitman (146) also used a task- and technique-controlled method combined with the drawing of a house and a man in comparing schizophrenics, depressives, and hysterics. The first step was the drawing of the house and the man. Then the subjects were shown twelve simple drawings of heads illustrating the following: "a man, a woman, laughing, smiling, angry, astonishment, happy expectation, despair, pride, depression, monk, girl." An illustration of number III, laughing, is given (Fig. 6).

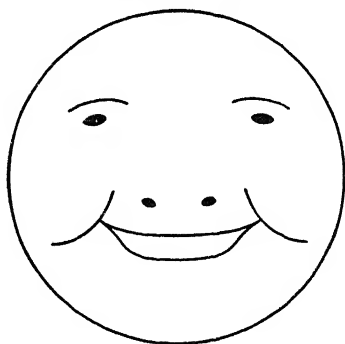


FIG. 6. LAUGHING, AFTER A DRAWING USED BY REITMANN.¹

¹ F. Reitmann, Facial expression in schizophrenic drawings. *J. ment. Sci.*, 85 (1939), Fig. 1, No. 3, p. 265. By permission.

These pictures were shown to the patient for three minutes and he was asked to name each one. After he was shown the whole series and had named them, he was asked to reproduce 1 to 6 from memory with a pencil and paper. On the following day the technique of drawing each of the pictures was explained in simple terms, the sketches were done for the patient, and then he was asked to reproduce them from memory. On the third day, a "genetic" explanation, showing how the drawings were developed by simple alterations to manifest the various states, was given to the patient. An example, the explanation of "laughing," consisted of five statements. In laughing: 1. the shape of the face alters from oval to round because the cheeks are drawn outward and upward; 2. the space between the eyebrows and the eyes becomes narrower because eyebrows and eyes are drawn closer together; 3. the nostrils spread outward; 4. when the cheeks are drawn outward and upward, they are represented as two circles that cut the corners of the mouth—in actual drawing only the curves cutting the corners of the mouth are shown, not entire circles; and 5. the corners of the mouth are drawn outward and upward and the upper and lower lip are drawn as two curves, one above the other, the lower one being smaller and deeper. The subject then drew the pictures again.

A final comment should be made on the simple recording device constructed by Barnhart for the cooperative experiments on children's art at the Cleveland Museum of Art (12, 13.). By affixing carbon paper under the drawings and a roll of recording paper which could be unwound manually as desired by the experimenter, he was able to obtain a record of the various stages involved in the creation of a single drawing, thus permitting analysis of the processes in the construction of art. While this would be of practical value in pencil and crayon drawings where heavy pressure is exerted on the paper, it would not be serviceable in painting or where pressure is more uneven, or in finger painting where the wet paper would create a technical problem.

METHODS OF INTERPRETATION OF ART AND THE SIGNIFICANCE
OF ELEMENTS IN DRAWINGS AND PAINTINGS

The analysis of a drawing or painting and of the process of production may range from an objective analysis on a limited basis to an extensive and minute study including both quantitative and qualitative factors. Rather than attempt to indicate individual approaches, we have tried to prepare a detailed summary table that includes the analytic schemes of many investigators. The specific references, from which the interpretative items were taken for inclusion in the table, are appended at the end. In a parallel column the clinical meaning of various aspects of drawing and painting are indicated, with reference numbers to the sources of the data.

For a thorough understanding of the value of the meanings assigned to the details of the outline, a prefatory note is necessary. Since artwork is a Gestalt in the same manner as handwriting or a Rorschach protocol, the importance assigned to specific details in art must be considered within the framework of the total act of creation and the total record of that performance. For example, to say that the choice of brown is indicative of a preoccupation with anal fantasy will be quite misleading unless specific qualifications, which effectively discriminate the circumstances under which that may be true, are outlined. As an illustration, brown may be chosen as the monochromatic color of a total picture, or it may be used realistically for a form which is normally perceived in everyday life as brown, e.g., the trunk of a tree, or, a mahogany table. Under the latter circumstances, it would be highly misleading to attribute the universal symbolic value of anal preoccupation to the brownness, even though in an individual case it might have that specific meaning, as, for instance, in some individuals who have a compulsive need to reproduce the specific form with a brown color. It must be recognized, however, that even with such a compulsion, the color may have another personalized meaning, or may be secondary in importance to the form itself and so of little interpretative value except as an indication of the quality of visual perceptions in the subject. Thus, since signs may be personal or typical of

a class, positive in one context, negative in another, consciously symbolic in one case, unconsciously meaningful in another, a trait-sign approach to analysis is as valueless in the interpretation of drawing as it is in that of handwriting or of the Thematic Apperception Test or of other expressions of the personality.

It must be remembered, also, that because a certain characteristic of technique, content, form, or color is found in a representative of a group, generalization on that basis to the group as a whole is exceedingly risky. Thus, if a subnormal individual reproduces a man without arms, we commit an error in logic if we assume that all retarded individuals will create such a form. If we deduce, every time we find a drawing of the human form without arms, that it was produced by a subnormal person, without the support of evidence that such a form does not come from any other classes of individuals, we are reading unjustifiable conclusions into experimental findings. Only comparative studies with control groups and sufficiently representative samples in each group can provide us with valid criteria for interpretation. Unfortunately for practical purposes, and yet fortunately for the research worker who wishes to explore unmapped regions of psychology, such experiments need, for the most part, to be accomplished.

A further precaution must be observed in interpreting the following table. While the terms used are generally subscribed to and in most instances bear a commonly accepted meaning, many of them carry a looseness that handicaps their suitability for scientific research. The salience of many previous studies of art has been reduced by the failure to deal with this semantic problem, although some workers, such as Schmidl-Waehner, have taken pains to construct specific definitions of their terminology.

It must be left to the reader to determine the applicability of these comments to the following table. Only a detailed criticism of each experiment upon which the table is based, which would be beyond the scope of this presentation, could determine the validity of the conclusions. With these reservations, then, some of the methods and findings of various students in the psychology of art are detailed in Table XVI.

The scheme in Table XVI has been suggested by the following

TABLE XVI

ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

*Analytic element**Clinical meaning**A. The Use of the Medium:**A.**1. Tools:**1.*

- a. Choice of tools: pencils, brushes, fingers, spatula, sticks, water colors, oil paints, clay, water, crayon, chalk;

- a. Pencils only—obliged to repress emotions; found in compulsion neurosis (30). Crayons—more a means of communication of ideas; paints—express how the child feels. As children get freer, prefer paint to crayons. Except in seriously disturbed children, crayon drawings and paintings show similarities (2).

*b. Size and/or amount of tools:**b.*

- i. Size of instruments, such as brushes: small, medium, large or varied;
- ii. Amount of paint, clay, water, etc. used;

- i. Smallest brushes—repression, compulsion neurosis (30).
- ii.

c. Use of materials:

- c. Often reveals former occupation and other previous experiences in psychotics (6).

*i. Customary use;**i.**ii. Unusual and curious use;**ii. Found in psychotics (6).*

- iii. For purposes other than art, e.g., throwing of paint on self, others, furniture, etc.;

iii.

- iv. Combination of more than one medium;
2. The use of the paper, or other base:
 - a. The size of the paper used:
 - i. Small (less than notebook size, $8\frac{1}{2}$ " x 13");
 - ii. Middle-sized (notebook size to drawing-pad size (14" x 21");
 - iii. Large (larger than drawing-pad size);
 - b. Proportions and shapes of format:
 - i. Conventional (sides in proportion of 3:4 or 2:3);
 - ii. Squares;
 - iii. Long rectangles (sides in proportion of 1:2 or 1:3);
 - iv. Fancy self-created formats—paper cut into odd shapes;
 - v. Fastening pages together to form book-let;
 - vi. Punching holes through paper for artistic purposes;
2.
 - a. Psychotic children use extremes (155).
 - i. Significant for reduced aggression. Almost specific for neurotic children who are depressive and anxious. Psychotic children who used this size were also depressive (155).
 - ii. More natural for children (155).
 - iii. Significant for increased aggression (155).
 - b.
 - i.
 - ii.
 - iii.
 - iv. Preference found in psychotic and feebleminded children, especially apathetic (155). Found in adult patients (7).
 - v. In patients (7).
 - vi. In patients (7).
- iv. Relatively common in psychotics (6).
Outstanding in patients (7).

TABLE XVI (Continued)

ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

<i>Analytic element</i>	<i>Clinical meaning</i>
<p>c. Distribution in proportion to paper:</p> <ul style="list-style-type: none"> i. Use of narrow area; ii. Use of broad area; iii. Unusual position of drawing on page, e.g., squeezed into a corner; iv. "Horror vacui," or compulsive filling in of all spaces; <p>d. Size in relation to paper: measurement suggested by drawing coordinates with edges of paper:</p> <ul style="list-style-type: none"> i. Small; ii. Free; iii. Large—widening of space by drawing only part of an object on the paper; <p>e. Fortuitous patterning, i.e., relying upon fortuitous arrangements of format such as spots on paper or knots in wood.</p>	<p>c.</p> <ul style="list-style-type: none"> i. ii. iii. In patients (7). Found in some depressives (146). iv. In psychotics (6, 122). <p>d. No characteristic difference between schizophrenics, depressives, and hysterics (146).</p> <ul style="list-style-type: none"> i. Inability to function freely in whole environment (2). Compulsion neurosis (30). ii. Ability to function freely in whole environment (2). iii. Potential ability of making contact with surrounding world (54). c. In patients (6, 7).

B. *Form Elements:*

- B. In general, self-control. Turning away from impulsive reactions and functioning on a more logical, rational basis (2).

- I. Lines:
 - a. Use of lines:
 - i. Partial;
 - ii. Exclusive;
 - iii. Wild scramble of lines;
 - iv. Avoidance of lines;
 - b. Quality of lines:
 - i. Straight;
 - ii. Curved;
 - iii. Angular;
 - iv. Fuzzy, smeary, sloppy;
 - v. Heavy pressure;
 - vi. Overmeticulous, rigid;
 - vii. Thin;
 - viii. Broad;
 - ix. Contaminating lines—overlapping function of lines—same line part of two figures;
 - x. Crisscross outline of figures;
 - xi. Evidences of motor incoordination and tremors;
 - c. Direction of lines:
 - i. Vertical;
 - ii. Horizontal;
 - iii. Oblique;
 - iv. Circular;
- I.
 - a.
 - i.
 - ii.
 - iii. Highly distractible, flitting from one activity to another (2).
 - iv.
 - b.
 - i.
 - ii.
 - iii.
 - iv. Escape from rigidity (122).
 - v. In patients (7).
 - vi. Feeble-minded (164).
 - vii. Repression (30).
 - viii.
 - ix. In patients (7). Specific sign of psychosis (122).
 - x. Specific sign of psychosis (122).
 - xi. In organic cases (6).
 - c.
 - i. More assertive, more masculine (2).
 - ii.
 - iii.
 - iv. More submissive, more effeminate (2). Endless circles—excitable (30).

TABLE XVI (Continued)
ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

<i>Analytic element</i>	<i>Clinical meaning</i>
v. Whorl;	v.
vi. Spiral;	vi. Endless spirals—excitable (30).
vii. Progressive—outwards toward environment;	vii.
viii. Regressive—receding toward the person;	viii.
2. Spots or blots, produced by shading or color;	2.
3. Smearing;	3. Through long periods, in deeply neurotic children (30).
4. Automatism, such as "doodlings";	4. Marked in psychotic children (47); in psychotic adults (6); in feeble-minded (164).
5. Detail forms:	5.
a. Quantity of details;	a.
i. Poverty of detail;	i.
ii. Moderate use;	ii.
iii. Excessive use;	iii.
b. Size of details; size of single form elements in relation to whole pictures:	b. Usually mixed. Those who show a preference are dull, unintelligent, feeble-minded, and flighty (155).
i. Micropsia—diminutive details;	i. In psychotics (6); in patients (7).
ii. Macropsia—large details;	ii.
iii. Size of space between details.	iii.

- c. Accuracy of details: presence of or avoidance of:
- i. Representational accuracy;
 - ii. Meticulous accuracy;
 - iii. Incongruities;
 - iv. Untidiness;
 - d. Elaboration of details:
 - i. Inclusion of refinements;
 - ii. Perseverative elaboration;
 - iii. Stereotyped elaboration;
 - iv. Uniform and monotonous elaboration;
 - v. Decorative elaboration;
 - vi. Roundness or angularity of details;
 - vii. Forms running into one another;
 - viii. Overlapping function of details;
 - ix. Drawing refinements of detail first and then outlining;
 - x. Linear elements developed piece by piece and then put together like a mosaic;
 - xi. Drawing of details or parts of details at unusual angles;
 - xii. Stimulus-bound — drawing around details or letters.
- c.
- i.
 - ii. In psychotics (6); in subnormals (150, 164); in abnormal children (52); in 30% of psychotics, 188 cases (7).
 - iii. In scientifically trained adults (36). In 15% of 1203 products by 188 patients to a slight degree (7).
 - iv. In psychotics (6, 7).
 - d.
 - i.
 - ii. In psychotics (6, 7).
 - iii. In psychotics (6).
 - iv. In psychotics (6).
 - v. In patients (7).
 - vi.
 - vii. In confused (30).
 - viii. In patients (7).
 - ix.
 - x. Tendency in schizophrenia (146).
 - xi. Heads or houses at unusual angles—in abnormal (172).
 - xii. In patients (7).

TABLE XVI (Continued)
ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

<i>Analytic element</i>	<i>Clinical meaning</i>
C. <i>Color Elements:</i>	C. A significant relationship between color responses on the Rorschach and the use of color in drawing, e.g., high values for use and selection of red on the Rorschach correspond with high color scores in painting (152). In general, color provides the clearest insights into a child's emotional life (2).
1. Hues chosen:	1. Feeble-minded: apathetic in selection (155).
a. Light;	a. Yellow and blue together indicate conflict over a child's desires to remain infantile and dependent (2). In one case of conversion hysteria, strong yellow indicated happy feelings, as did vivid red, bright green, and gay blue. Black, gray, tan: used in moods of sadness and depression (129).
b. Warm;	b. Red is the most emotionally toned of all colors; indicates: <ol style="list-style-type: none"> feelings of affection and love; feelings of aggression and hate; interest in red decreases as children outgrow the impulsive stage and grow into the stage of reasoning and of greater emotional control (2). Yellow and red: expression of hostility and aggression (30). Orange:

tempered emotions, e.g., sympathy and friendliness—more phantasy and less action (2).

- c. Cool;
 - c. Blue indicates drives toward control, with a strong underlying emotional core. Green is used at a relatively controlled level, often lacking a strong underlying emotional core. It is sometimes associated with elimination or eating difficulties (2).
 - d. Dark;
 - d. Found in anxiety and depression in children (30). Brown, blue, and violet symbols of depression (102, 172). Dark and smudgy colors indicate depression (30). Brown: in periods of regression (30). Blue and brown together: working through conflict over toilet-training (2).
 - e. Black and/or white;
 - e. Black symbolic of depression (102, 172). Use of black only, obliged to repress emotions (30). Black, favorite overlay, indicates intense anxieties and/or fears (2). Introverts select gray (152).
2. Intensity:
 - a. Bright;
 - b. Dull;
 - c. Watery;
3. Frequency of choice:
 - a.
 - b. In compulsion neurosis (30).
 - c. When afraid of self-revelation (30).
2.
 - a.
 - b. In compulsion neurosis (30).
 - c. When afraid of self-revelation (30).
3. 58% of 188 patients chose color in at least one specimen (7).

TABLE XVI (Continued)

ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

Analytic element

a. Number of colors chosen;

b. Colors avoided or resisted;

c. Perseveration of color choices;

d. No color chosen;

4. Quantity of color:

a. Few touches of color;

b. Monochromatic painting;

c. Moderate use of color;

d. Excessive use of color;

5. The application of color:

a. Colors used separately;

Clinical meaning

a. Normals use all colors, yellow less than blue or red, little black and almost no white. Neurotic depressives use little yellow and red, mostly mixtures and black; many use blue and more white than normals (155). Red and yellow chosen most frequently by patients (152). Violet and white rarely used by patients (146, 152).

b. In two cases, fear of red represented fear of castration (30).

c.

d. Observed in serious neurotics (30). The most withdrawn psychotics fear color (155).

4.

a. 5% of cases of patients (7).

b. 5% of cases (7).

c. 36% of cases (7).

d. In psychotics (6). In 12% of cases (7). In feeble-minded (155).

5.

a. Significant of outgoing but highly controlled or directed emotions (2)

- b. Intermingling of colors;
 - c. Parallel lines of color;
 - d. Patches of color;
 - e. Angular surfaces of color;
 - f. Streaks;
 - g. Synchronistic swirls or splashes;
 - h. Outlining in color;
 - i. Color overlay;
 - j. Uncolored figure on colored background;
6. Realistic use of color;
7. Unrealistic or fantastic use of color.

D. Content:

 1. Choice of and quantity of content:
 - a. Scribbling;
 - b. Realistic objects: e.g.:
 - i. Flowers;
 - ii. Animals;
- b. Outgoing, less controlled emotional flow (2).
 - c. In patients (7).
 - d. In patients (7).
 - e. In patients (7).
 - f. In patients (7).
 - g. In patients (7).
 - h. In patients (7).
 - i. Indicates repression (2). A sign of acute emotional conflicts (30). In patients (7).
 - j. In patients (7).
6. In 14% of cases, 4% extensively. The latter were all dementia praecox of high education, higher art training and predominantly urban (7).
7. In psychotics (6).
 1.
 - a. Found in relatively young adult patients, above average in education and occupation, all dementia praecox (7).
 - b. Tendency for more women than men to produce (7).
 - i. Tendency for more women than men to produce (7).
 - ii. Predominantly from rural patients (7). Large and powerful animals such as fighting bulls or mounting horses represent a struggle to domineer; the stallion

ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

*Analytic element**Clinical meaning*

- indicates sex-curiosity in pre-adolescent girls (30). More boys produce animals than girls. Aggressive animals are found in the psychoneurotic, domestic animals in mild behavior problems. Birds and horses are associated with truancy and vagrancy. Cats and dogs symbolize home, frequently children in the home. Ducks symbolize a kindly mother figure. Four types of wild animal pictures:
- a. wild animals which looked benign—in cases of depression or marked inferiority;
 - b. very aggressive animals—associated with an obvious inverted Oedipus complex with severe anxiety and indicative of an oral aggressive trend;
 - c. a child identified with the attacking animal;
 - d. an animal connected with a phobia formation—in one case there was displacement of fear from the father to the animal, a reversal of aggression,

and regression back to the oral level (20).

- iii. More frequently produced by women than men (7).
- iv. Tendency for more men to produce than women (7).
- v. Relatively greater number in patients from small towns than from rural or larger urban districts (7).
- vi. Relatively greater number in patients from small towns (7). Increased elaboration of detail with age; regression in development at age twelve; drawing of mental defectives comparable with drawings of normals several years younger; long thin houses symptomatic of emotional disturbance; drawings of neurotics fell below standard for age group (87).
- vii. Represent mother or womb (21).

d.

- i.
- ii. Patients tend to be somewhat older, of relatively low education and occupation —one-third from religious occupations. Slight predominance of paranoid (7).
- iii.

iii. Fruit;

iv. Manufactured objects;

v. Buildings;

vi. Houses;

vii. Boats;

c. Symbols and fantastic objects, e.g.:

- i. Archetypal symbols;
- ii. Conventional symbolism;

iii. Partially fantastic;

TABLE XVI (Continued)

ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

Analytic element

- iv. Completely fantastic;
- v. Exaggerated or obscure symbolism;
- vi. Fantasy persons and animals;
- vii. Supernatural and fabulous creatures;
- d. Abstractions;
- e. Thematic representations:
 - i. Expressions of personal fantasy;
 - ii. Folklore and mythology;
 - iii. Religious themes;
- iv. Sexual and obscene;
- v. Stage scenes;
- vi. Sports events;

Clinical meaning

- iv. Relatively young patients, above average in education and art training, pre-dominance of urban background, but very heterogeneous in background. Out of 21 cases, 16 dementia praecox, 1 psychopath, 3 manic, and 1 psychosis with mental deficiency (7).
- v. In patients (6, 7).
- vi. Fear-inspiring fantasy animals show an effort to prove power (30).
- vii. Predominant in patients (6).
- d.
- e.
 - i.
 - ii.
 - iii. Predominant in patients (6). In 15% of patients (7).
 - iv. In patients (6). In 10% of patients (7).
 - v. Frequent in girls, evidence of wishful thinking (30).
 - vi. Bullfights or baseball games, evidence of wishful thinking in boys. If crowds are watching, boy feels insecure and inferior (30).

- vii. Representation of delusional ideas;
- viii. Reproduction of hallucinations and illusions;
- ix. Allegories;
- x. Social experiences;
- xi. Unpleasant experiences;
- xii. Fears;
- xiii. Aggression;
- xiv. Deformation or injury of living beings;
- xv. Destruction by fire, flood, etc.;
- xvi. Scenes of ruin;
- xvii. War;
- xviii. Etc.;
- f. Decoration:
 - i. Conventional-decorative;
 - ii. Imaginative-decorative;
- iii. Baroque over-ornamentation;
- iv. Rigid, repetitive;
- g. Cartoons, illustrations, caricatures;

- vii. In patients (6).
- viii. In patients (6).
- ix. Predominant in patients (6).
- x.
- xi. No significant differences between normals, institutionalized, and delinquents (56).
- xii.
- xiii. Repeated aggression indicative of deep neuroticism in children (30).
- xiv. In patients (6). 14% of patients (7).
- xv. In patients (6). Houses, woods, haystacks, and boats threatened by fire indicates hostility (30).
- xvi. In patients (6).
- xvii. Expresses both hostility and regression (127).
- xviii.
- f.
 - i. In a wide range of patients (7).
 - ii. Found in dementia praecox, manic, psychasthenic of high occupational level (artistic) (7).
 - iii. In psychotics (6).
 - iv.
 - g. Found in slightly younger patients of inferior education—5/6 sex offenders (7).

TABLE XVI (Continued)
ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

<i>Analytic element</i>	<i>Clinical meaning</i>
h. Portraits and other representations of people;	h.
i. Representation of man, noting:	<p>i. Deviations are effected by psychotic disturbance (104). Adolescents who draw men well tend to be of high (but perhaps not very high) intelligence, to be "visiles" in their thinking, to be extroverted (and perhaps extremely extroverted), to be greatly interested in their fellow men, but to prefer to mix with them and to influence their behavior by indirect rather than by direct contacts (135).</p> <p>a'. Disproportion in psychotics (6). Short arms in proportion to figure found in feebleminded (150, 164). Oversized hands indicative of masturbation (30).</p> <p>b'. Strange relationship not corresponding to reality is, in adults, a specific sign of psychosis (122*).</p> <p>c'. Poverty and stiffness of expression found in schizophrenia; vivid, striking</p>
a'. Proportion of body parts;	
b'. Organ relationship;	
c'. Expression;	

ing expression in hysterics (146).
Bleeding soldiers indicative of hostility (30).

- d'. Sex characteristics and obscenity;
 - ii. Man in social setting;
 - a'. Participant in group;
 - b'. Observed;
 - c'. Observer;
 - iii. Absence of humans;
 - i. Landscapes:
 - i. With humans;
 - ii. Without humans;
 - iii. Cultivated;
 - iv. Wild, uncultivated—jungle;
 - v. Mountains, volcanoes;
 - vi. Etc.;
 - j. Geometric forms:
 - i. Abstract designs;
 - ii. Diagrams;
- d'. In patients (6). In abnormals (52, 147). Inversion of sex characteristics found in abnormals (52, 66). Reversal of sex characteristics is typical of postencephalitics (24).
- ii. Institutionalized and delinquents have more social pictures than normals (56).
 - a'.
 - b'.
 - c'.
 - iii. Indicates difficulties in social relationships (30). Found in subnormal (172).
 - i. Found predominantly in rural patients (7).
 - i.
 - ii.
 - iii.
 - iv.
 - v. Volcanoes indicate hostility (30).
 - vi.
 - j.
 - i. In subnormal (172). In abnormal (52, 147). Stylized, in psychotics (6).
 - ii. In paranoids (6). Large majority are paranoid: slight predominance of males (7).

TABLE XVI (Continued)
ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

<i>Analytic element</i>	<i>Clinical meaning</i>
iii. Constructions;	iii. Hetero-diagnosis, below average education and occupation, large proportion of manual occupations (7). Found in paranoids (6).
iv. Project plan;	iv. Paranoid (6).
v. Maps;	v. Paranoid (6).
k. Inclusion of writing:	k. In abnormals (172).
i. Absence;	i. Associated with greater art training. In 80/188 cases (7).
ii. Title;	ii. 48/188 cases (7).
iii. Elaborated signature;	iii. Low occupational background, predominantly paranoid. In 36/188 cases (7).
iv. Formal conventional message;	iv. Younger in age, slightly more art training characteristic of 15/188 patients who produced this (7).
v. Personal message;	v. In 10/188 patients (7).
vi. Labels;	vi. Males and paranoids most frequent in the 33/188 patients showing this (7).
vii. Letters;	vii. In patients (6).
viii. Words;	viii. In patients (6).
ix. Arithmetical and algebraical symbols;	ix. In patients (6).

x. Explanatory passage;

xi. Illustrated writing;

xii. Brief, internally coherent comments;

xiii. Disjointed or incoherent writing;

xiv. Decorative writing;

xv. Doodling or scribbling;

xvi. Neologisms;

2. Quality of Content:

a. Realistic:

i. Literal realism—physioplasmic;

ii. Intellectual realism—ideoplastic;

b. Fantastic or unrealistic;

c. Abstract;

d. Stereotyped;

e. Symbolic:

i. Conscious—e.g., professional, fraternal, patriotic, religious, family symbols;

ii. Unconscious;

x. Long passages—excess of paranoids, older, institutionalized long, males. 20/-188 cases (7).

xi. Higher average age, higher educational and occupational background among 12/188 patients (7).

xii. In 10/188 patients (7).

xiii. 28/188 cases, of which 22 dementia praecox, 4 manic, 2 paranoid (7).

xiv. 5/188, all men, older, slightly greater art training (7).

xv. 3/188, all dementia praecox (7).

xvi. In psychotics (6).

2.

a.

i.

ii. In psychotics (6). In 6% of cases and only to a minor degree, 3 of them feeble-minded; group of low education and occupation (7).

b.

c.

d. In psychotics (6, 7, 122). In feeble-minded and abnormal children (52, 147, 150, 164).

e.

i.

ii.

TABLE XVI (Continued)

ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

*Analytic element**Clinical meaning*

- f. Narrative;
g. Decorative;
h. Primitive and regressive;

- f.
g.
h. Found in older women patients with a wide variety of diagnoses, mostly inferior in education and occupation (7).
Primitive combined with mature: indicative of great emotional instability (24); in subnormals (150); in abnormals (52, 66, 67).
Regressive: a specific sign of psychosis (122). In retarded (150). In psychotics (47). No evidence of regression in neurotic (29).

- i. Vague;
j. Unrelated;

- i.
j. Incomprehensible mixture of fragments of objects or persons found in psychotics (6). Majority of cases among patients with dementia praecox and high educational background (7).
k. In psychotics (6).

- k. Exaggerated;
l. Anthropomorphic;
m. Grotesque.

- l.
m. In psychotics (6). In abnormal children (64, 163).

E. *Composition*

1. Symmetry:

- a. Equally or approximately equally shaped forms;
- b. Approximately the same dimensions of forms;
- c. Approximately equidistant from main axis;
- d. Same details repeated;
- e. Same color repeated;
- f. Lack of symmetry;

2. Balance:

- a. Different forms of approximately equal "weight" on either side of main horizontal or vertical axes;
- b. Different colors balanced for mass and intensity;

c. Lack of balance;

3. Emphasis:

- a. Centricity;
- b. Irrelevant emphasis;
- c. Masked emphasis—blotting-over;
- d. Closing-in (frames);

1. Normal: slight tendency to loose symmetrical arrangement. No normal showed rigid symmetry. Depressives: rigid symmetry; neurotic fixation: rigid symmetry (155).

a.

b.

c.

d.

e.

f. Increases in psychotics; characteristic of feeble-minded (155). In psychotics (6). In retarded (164).

2.

a.

b.

c.

3.

a.

b. In abnormal (52, 147).

c.

d. In patients (7). More frequently found in depressives than in schizophrenics and hysterics (146).

TABLE XVI (Continued)
ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

<i>Analytic element</i>	<i>Clinical meaning</i>
4. Rhythm:	4. Reveals inner dynamics of the individual (54).
a. Rigid, uniform rhythm—parallel repetition of forms and/or colors;	a. In stereotyped psychotics (155). Extremely rigid repetition—demented psychotic and feeble-minded (155).
b. Differentiated rhythm—aspects of drawing kinesthetically connected with a relaxed, free, and flowing movement;	b. Especially found in gifted (155).
c. Absence of rhythm;	c.
5. Proportion:	5.
a. Simple proportion between lines, forms, color masses;	a.
b. Disproportions between elements;	b.
c. Lack of proportion;	c. In retarded (164).
6. Perspective and background:	6.
a. Absence of background;	a.
b. Differentiation from background;	b.
c. Clarification of background;	c.
d. Creation of spacious background;	d. Potential ability of making contact with surrounding world (54).
e. Regard for principles of perspective representation;	e.
f. Distortions of perspective:	f. In psychotics (6).
i. Absence of perspective;	i. In patients (7).

- ii. Exaggerated perspective;
- iii. Inconsistent perspective;
- iv. Object from unusual point of view;
- v. Disregard for opacity of objects;

7. Integration:

a. Synthesis:

- i. Individualization and differentiation of objects in the totality;
- ii. Reducing objects to simplest pattern—primitivation;

b. Asynthesis:

- i. Incoherence of parts;
- ii. Inconsistency of parts;
- iii. Arbitrary representation of functional relationships;
- iv. Inadequate fusion of elements;
- v. Chain drawings;
- vi. Overlapping figures;
- vii. "Grapelike" or "cauliflower" formations;
- viii. Chaotic organization;

8. Style:

a. Expansion:

i. Breadth:

- ii. In patients (7).
- iii. In patients (7).
- iv. In patients (7).
- v.

7.

- a. In normals (1). Indicative of cosmic order in individuals (54).
- i.

- ii. May have positive or negative weighting depending on the organization achieved (54).

- b. Indicates chaos in individual (54). In psychotics (6).

- i. In psychotics (6). In subnormal (51).
- ii. In psychotics (6).
- iii. In scientifically trained adults (36).

- iv. In scientifically trained adults (36).

- v. In psychotics (6).

- vi.

- vii. In psychotics (6).

- viii. In psychotics (6).

- 8. Often reveals former occupation and other previous experiences (6).

- a.

- i.

TABLE XVI (Continued)
ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

<i>Analytic element</i>	<i>Clinical meaning</i>
a'. Widening of space on paper by drawing part of object;	a'.
b'. Creation of "spacious" background;	b'.
c'. Creation of experience of space through rhythm and integration;	c'.
ii. Certainty;	ii.
iii. Fluency;	iii.
iv. Exuberance;	iv.
b. Compression:	b.
i. Cramped, fearful concept of space;	i.
ii. Tightness or anxiety in performance;	ii.
iii. Hesitancy;	iii.
iv. Carefulness;	iv.
v. Deliberation;	v.
c. "Stylization":	c. In psychotics (6, 7).
i. Stereotypy	i.
a'. Reproducing monotonously a single pattern;	a'.
b'. Direct copying of available art object;	b'.
c'. Social stereotypy—copying work of neighbor in group;	c'.

- d'. Attempt to imitate style of an "artist" without sample of work at hand to copy;
- ii. Stylistic resemblance to drawings of children and primitive groups.

F. *Motion Elements*;

1. Positive in movement.

- a. Movement representations:
- i. Human and human-like movement or posture;
 - ii. Animal or animal-like movement;
 - iii. Inanimate motion;
- b. Formal indications of kinesthesia: occurrence of:
- i. Curves;
 - ii. Slanting forms;
 - iii. Angles;
 - iv. Vivid details;
 - v. Vivid dynamic distribution;
 - vi. Differentiated rhythm;
2. Negative in movement:
- a. Absence of movement indications in forms capable of movement:
- i. Human;

d'

ii. In psychotics (6).

1. Normals have more movement than neurotics or psychotics; most in gifted.
Depressives: decrease in movement; psychotics: biggest range; feebleminded: lowest number of movement responses (155).
- a.
- i.
 - ii.
 - iii.
- i.
- ii.
 - iii.
 - iv.
 - v.
 - vi.
2.
- a.
- i.

TABLE XVI (Continued)

ELEMENTS IN THE ANALYSIS OF DRAWING AND PAINTING WITH THEIR CLINICAL SIGNIFICANCE

<i>Analytic element</i>	<i>Clinical meaning</i>
ii. Animal; iii. Inanimate; b. Formal indications of rigidity: i. Rigid, static distribution; ii. Rigid symmetry; iii. Rigid, uniform rhythm.	ii. iii. b. In psychotics (6). i. ii. iii.
C. General Performance Characteristics:	
1. Approach:	i. Some consider certain psychoses more conducive to creative activity: dementia praecox, paranoia, manic, epilepsy (most frequently mentioned) (6). a. Found in some patients (6). b. Institutionalized and delinquent more productive than normals (56). c. d. Evidence of resistance (30). Found in deeper neuroses (30). Frequently found in schizophrenics (146). Reduced as subjects gain confidence in self and ability to create (127). e. Evidence of resistance (30).
a. Overwhelming urge to produce; b. Active participation in process; c. Restrained participation; d. Automatic repetition of a single pattern; e. Refusal to take part:	

2. Instructions and suggestions:
 - a. Dependent upon others for suggestions;
 - b. Obsessive about carrying out instructions;
 - c. Capable of independent work but obliging, and accepting of suggestions;
 - d. Resentful of suggestions but follows them;
 - e. Refusal to follow instructions;
 - f. Misunderstanding of instructions;
 3. Mannerisms:
 - a. Verbal
 - b. Motor;
 4. Verbal association to process and product:
 - a. Free;
 - b. Free, but superficial;
 - c. Flight of ideas;
 - d. Restrained;
 - e. Rigidly unable to associate;
 5. Satisfaction or dissatisfaction;
 - a. Uncritical self-satisfaction;
 - b. Critical self-satisfaction;
 - c. Lack of expression of satisfaction or dissatisfaction;
 - d. Moderate dissatisfaction;
 - e. Gross criticism and dissatisfaction.
2.
 - a.
 - b. Found in schizophrenics, predominantly paranoid (1). Subnormal, not obsessive (1).
 - c. Found in depressives (146).
 - d.
 - e.
 - f. Found in schizophrenics (146).
 3. Individualized, in psychotics (6).
 - a.
 - b.
 4.
 - a. In patients (6).
 - b. In patients (6, 7).
 - c. In patients (6).
 - d.
 - e.
 5.
 - a. In scientifically trained adults (36).
 - b.
 - c. Characteristic of schizophrenics (146).
 - d.
 - e.
-

references. Those which have contributed especially to the outline have been starred (*): Abel (1), Alschuler and Hattwick (2),* Anastasi and Foley (5, 6, 7,)* Bender and Rapoport (20), Bender and Wolfson (21), Berrien (24), Bricks (30), Cameron (35, 36), Elkisch (54),* England (56, 57), Goodenough (65, 66, 67), Kerr (87), Liss (102), Lowenfeld (103, 104), Mosse (122), Naumberg (127-133), Oakley (134, 135), Reitman (146), Ruesch and Finesinger (152), Schmidl-Waehner (155, 156),* Schube and Cowell (157),* Spoerl (164, 165), Wolff (178-180).*

In the context of methods of interpretation it is necessary, also, to mention the specific interpretative categories which Harms (72, 73, 75) used in his "line analyses." He distinguishes six fundamental types of formal expression in the abstract line drawings representing various emotions, actions, and states. The first is the *monographical* type, where a single small sign similar to an alphabetical symbol is used; secondly, the *cursive* type, with a small sign repeated in a formal way; thirdly, the *pictographical*, which is abstract only in some kind of symbolic or pictorial way, e.g., "shoe" for "walking"; next, the *script* type, with a single long line as in a graph, showing a rhythmic repetition of one, two or even three motifs tied together in a single line; fifth, the *spatial* type, where emotions are expressed by the up or down movements of the lines; and lastly, the *final* type, which presents a single line going without pattern in this or that direction.

SUMMARY

Background studies in art have contributed to the use of art as a projective device. They consist of four types: art as paralleling chronological growth, art tests for intelligence and special abilities, cultural factors in art, and aesthetic judgments. Upon these foundations have been built a great variety of experiments into the relationships between personality and art. The methods for securing art samples have ranged from spontaneous artistic activity with a wide range of materials, through combining such free art with more controlled tasks, to rather rigid methods of limiting the projects, the materials, and the circumstances under which the art is produced. A lengthy tabulation of the methods of

analysis of art and of the clinical significance of various aspects of drawing, painting, and other activities has been developed. This table indicates the complexity of art forms and processes and the difficulties in standardizing interpretative methods. The primary aspects of art are shown to be: the use of the medium, the form elements, the color elements, the content, the composition, the motion elements and the general performance characteristics.

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CHAPTER XVIII

FINGER PAINTING

WHILE finger painting might well have been included as an aspect of drawing and painting, there is ample justification for its separate consideration. This technique, which originated with Shaw (10), occupies a middle position between brush painting and expressive movement and might be more readily compared with clay modeling than with drawing. The unique feature of finger painting is the possibility it provides for rapid and easy creation of colorful pictures without the preliminary mastery of a complicated skill in handling tools. Thus it is adapted to very young children, yet it provides for older children and adults a satisfying art medium because it overcomes much of the inhibition of self-criticism that results from their efforts to work with pencils or brushes. The plastic nature and texture qualities of finger paints have been variously reported as a further advantage in their use. In these respects they compare with "mud," which almost all children enjoy as a play object.

Finger painting was invented in 1930, while Shaw was teaching in her school for English-speaking children in Rome, and was named by one of her pupils. Many attempts to find a suitable formula were made before she finally created a paint that had the necessary color and texture qualities, that was harmless to the skin and if taken internally, that was non-staining so that it might be washed off the clothes and the skin, and that would produce permanent pictures. Her paints, which are now produced commercially and are generally available, are superior in these respects to practically all imitations.

The paints are simple to use. A glazed paper is dipped in water and laid flat on a table; a smear of color is applied to the wet paper with a spatula and then worked with the fingers, the

hands, the forearms, or even, as Shaw amusingly relates, with the feet. The completed picture may be lifted onto sheets of newspaper for drying and, when dry, pressed flat with a warm iron if desired.

Psychologists and psychiatrists were quick to utilize this fluid medium following the lead of Shaw, whose own experiences with her invention had led her to see its diagnostic and therapeutic possibilities and whose graciousness, enthusiasm, and skill as a teacher facilitated the spread of knowledge about it. Within a year after publication of her own description of finger painting, Spring (12) published the report of the case of a stammerer who had been treated through finger painting and analysis. As with many projective techniques the first psychological use of this method was in therapy. Fleming (3) continued the reports of therapy involving this form of art in her study of the treatment of three anxiety hysterics, one pathologic personality, one obsessive-compulsive, two conversion hysterics, four schizophrenics, and six reactive depressives, all adults. Each of the paintings produced had to be entitled by the patient who drew it. Her general conclusions supported those of Shaw and Lyle (11) that finger painting releases tension, is a valuable medium for eliciting fantasy material of remarkable spontaneity and significance concerning the patient's moods and conflicts. She found value in the art, also, as an introduction to an interview process and as a permanent record of therapeutic growth. Mosse (5) advocated finger painting as a superior art medium and combined it with free association as an analytic technique.

Lerner and Murphy (4) were among the first to use this form of painting as a projective technique apart from therapy, although they recognized its therapeutic value. Wolff (14) included it in his survey of projective methods for use with preschool children, emphasizing especially its value for revealing the movement patterns of the child.

The most thorough and systematic analysis of finger painting has been developed by Napoli (7, 8), who has set forth many hypotheses about the meaning of its different characteristics. His interpretation is based on study of the total behavior of the individual from the beginning to the end of the painting act. His con-

clusions about the significance of the behavior are presented without statistical confirmation and so can only be regarded as suggestive. He begins the analysis with observation of the initial phases of the painting. Among these he notes the posture and movement of the individual. Leaning on one hand, he claims, is an indication of self-consciousness; leaning against the table, of a lack of self-reliance. Individuals who assume these postures are distressed when they, almost inevitably, get paint on themselves. Others are observed to shift from one foot to another, or to wrap one foot around another—they are shy, timid, withdrawn, and embarrassed. They compensate by scratching the paper or slapping the paint, often using too much water or paint; their pictures show confusion, lack of balance, and violent content; they are inarticulate verbally. Depressives show a lack of motivation; their motion is slow and undirected. Indicative of severe depression is reaching toward the middle of the paper, letting the arm slump off and fall against the body; the severely depressed reacts with shock in realizing he has paint on his clothes, stiffens his body and smells his hands, sometimes getting paint on his face.

Napoli observes, also, the manner of approach to the painting, e.g., the amount of paint taken, in comparison with the quantity already suggested by the examiner, which gives clues to the subject's attitudes toward the colors; the returning of the paint container to its predetermined place, giving evidence of the subject's orderliness, obedience, and social consideration. He notes, further, the attitude of the individual to the beginning of painting. Indifference is seldom observed, but hesitancy and reluctance are frequent and have various meanings—sometimes lack of emotional interest, lack of preparation, lack of self-reliance, or poor transference with the administrator, but usually lack of adaptability and timidity. The placing of the paper is another item of importance. The majority of subjects place it horizontally; the more aesthetic and those with higher skill development may place it vertically.

In order to classify the position of the first daub of paint, Napoli divided the paper area into sections as illustrated in Figure 7.

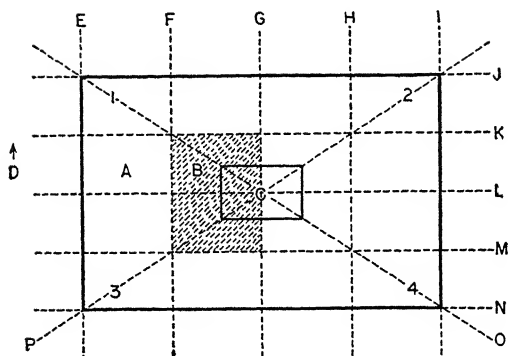


FIG. 7. LOCATION CHART FOR FINGER PAINTING. (Napoli.)¹

Those with the highest development in rhythm, stability, and points of interest place the paint in area B; those who use area A are less developed in skill and articulation, achieve less perspective and organization, and are more likely to have moods of depression or elation, and to be careless, untidy, and ambivalent. Those who put the paint in the center area, C, are extremely timid, egotistical, and egocentric. The paranoid individuals use the verticals; schizoid, the horizontals; and the withdrawn, frightened, and fearful, the perimeters.

The starting of the painting movement provides other important insights into the personality. Right-handed individuals normally start in the shaded area of B and move in a clockwise fashion, i.e., with a beginning upstroke; the left-handed start in the unshaded portion of B and move anticlockwise, with an upstroke. Those who move first in segments 1 and 2 of area B are more optimistically inclined; those in 3 and 4, are more depressed. Line L represents the line of demarcation of the moods which are within the normal range if the starting movements are within K and M. Those who start in A are either neurotic or psychotic and tend to paint in the horizontal only, or with non-rhythmic, non-curved lines. Of those who begin near the edge, the depressed tend to start at the bottom and to work off the paper, whereas the elated start at the top and work down. Those with mixed moods tend to work in A and off the paper in D.

¹ P. J. Napoli, Interpretive aspects of finger-painting, *J. Psychol.*, 23 (1947), Fig. 1, p. 97. By permission.

Of further importance is consideration of the parts of the hand used. Napoli has observed the following:

1. Whole hand, palm and fingers, throwing weight on the paper—normal;
2. Tips of fingers—neurotic trend, typical of women who dislike dishes, reject menstruation, and pass on child rearing to others;
3. Palm of the hand with fingers up—the intensely passionate or the perverted;
4. Lateral side—the inadequate, the vocationally or socially inferior;
5. Fingers only, those who pick the paint in a teasing manner—masturbators;
6. Arms—wasteful, show-offs.

Other over-all aspects are observable: the working of the paint—those who do not work the paint are neurotic; the paper surface covered—children and adults usually cover the whole area; the partial or over-all nature of the pattern; the neatness—lack of neatness indicates bad coordination or guilt and, when combined with “water” or “mud” consistency of paints, insecurity; the sequence of activities in the performance cycle; the satisfaction or displeasure, and relaxation or stimulation at the end; the way the subject cleans up; the span of interest; and the desire for repetition of the process.

Napoli has also discriminated specific details of the painting process in addition to those already mentioned. The *choices of colors* are limited to blue, green, red, yellow, black, and brown. Blue and, secondarily, green are preferred by males; red and, secondarily, yellow, by females. In addition to the basic colors, many combinations and shades may be produced, as well as “mud”—a brown mixture obtained through working several colors together. Several *motions* are separable—smearing, scrubbing, scribbling, pushing out, pulling in, patting, slapping, scratching, and picking. Males are found to prefer a *rhythm* composed of an even number of elements, whereas females prefer an odd number in their rhythms. The *texture* of the paint may be normal, lumpy and dry, lumpy and wet, little paint but very wet, or smooth and dry. The *composition* may have or lack balance, may be orderly or disorganized, and may or may not contain symbolism. The *verbalization* may reveal the person by its form and

content, as may also the *trend of behavior*, both in individual sessions and a series of sessions. A final interpretative category is the *skill span* of the individual, that is, the range of artistic and intellectual ability shown in the total performance.

Both Rosenzweig and Durbin (9) and Napoli (7) have reported characteristics of finger painting with psychotic subjects, the former describing the style, form, color, and variety of paintings by 50 schizophrenic and manic-depressive patients. Napoli described the finger-painting syndrome for the schizophrenic and paranoid personalities. The schizophrenic reveals himself in two or more illogical, unrelated, disorganized, and incoherent strata of representations which are invariably found. The degree of deterioration in the patient is inversely relative to the amount of composition and balance in the painting. The verbalization follows the same incoherent, illogical, disoriented, delusional, and unrealistic aspects as the painting. The patient manifests this in the constant change of meaning and identification he ascribes to the elements of the production. It is noteworthy that whispering occurs either during the process of painting or during association to it. The paranoid personality is distinguishable because it places the central figure in the very center of the picture and integrates the rest of the picture around this figure. The central theme is well balanced on either side with other objects, for the purpose (as the subject explains) of protecting the central object which is usually identified with the self. Such protectiveness is also noted in the verbalization. Objects that thwart are also shown in the painting and confirmed in the verbalization, which usually reveals violence as well.

EVALUATION

It is obvious that much of the interpretation of finger painting in its present applications lacks objectivity, although many features of the process are objectively measurable. A distinct service to diagnosis could be performed by research which would identify and relate to the personality the quantitative aspects of the art. Analysis of finger painting need not stop with the objective, however, but, building upon an objective foundation, may proceed by the adequate definition of subjective elements to the

inclusion of the total range of performance as interpretative data. Whether or not such research appears in the future, finger painting will remain as a technique with unusual recreational, personal-release, and artistic values, which, of themselves, make it important in the clinical situation.

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CHAPTER XIX

COMPLETING PICTURES

THE EARLIEST uses of picture completion were as instruments for the measurement of intelligence (e.g., Pintner and Toops, (5)). Probably the first use of this type of test for the diagnosis of personality was by Sander, an application of whose test was reported by Berger (1). This measure calls for the completion in crayon of six barely suggested line drawings. The productions were judged in terms of position, content, coloring, integration, and various other characteristics. Sanford developed a picture-completion test for personality diagnosis (6), which was used by Murray in his extensive investigation of fantasy (3, 4). The most systematic proposal for a test on this basis has been presented by Hellersberg (2), in what she calls the Horn-Hellersberg Test. Although the test has been suggested and its merits explored to a certain extent by the author, its status at the moment is in the introductory stages, as is the case with so many projective devices.

The test was originally created by Carl Horn for selecting art students for the Rochester Atheneum and Mechanical Institute where he was teaching. It consisted of 12 squares, each containing a number of lines taken from internationally known paintings. Hellersberg added another square without lines, and asked individuals to "take your pencil and make a picture out of every square, using the given lines." After the making of the pictures an inquiry interview was performed. The reporting of the reactions of the client to the test situation, his behavior during the test, his answers to the inquiry, and incidental remarks yielded the material for analysis.

On the basis of her experience with 500 to 600 subjects, Hellersberg suggested evaluation of three aspects of the record, the

first of which is the subject's mode of perceptual operations. In order to accomplish the task in the test the subject must observe and use the lines in the various squares. Summing up the perceptual processes involved depends largely upon inference from the approach to the task, and from discreet questioning in the inquiry. Sometimes the drawing of the perceived form proves too difficult either from a mechanical point of view or from a personality point of view. When the subject is unable to draw he is permitted to tell what he would have drawn. If there is personal involvement of the subject in the fantasy produced this may be revealed by the inquiry, especially where squares have been skipped. These blank squares, thus, often assume more importance than the squares in which there has been an attempt at performance.

The drawing is the second area to be examined in interpretation. Some individuals create wholes, some use each line separately. Deficiencies in drawing performance are sometimes compensated for by sophisticated titles, i.e., by verbal or abstract organization. The contents of the mind are revealed in the titles applied to the drawings. The form and the drawing technique also bear their own symbolic meaning. For example, some individuals use the finest of lines; others, heavy strokes; some use no shading whatsoever; others fill space with dark patches; some draw elaborately; some, casually and in sketchy fashion; some reveal the rigidity of their inner patterns by drawing shadows in screen or iron-fence pattern.

The third phase of the interpretation is study of the verbalization, especially of the text of the inquiry. In the interview a subject titles each picture, gives his reactions to the products, and associates to each picture as a whole and in detail. What he says reveals his attitudes and the content of fantasy. He sometimes apologizes for the childishness of his art, or justifies incongruities, or is proud of his productiveness, or is disturbed at overlooking lines. For omissions of lines he may apologize, fabricate reasons, or admit he didn't see them, or carry a "chip on his shoulder," or rationalize "well I didn't do that."

Hellersberg distinguishes several manners of adapting to the test situation. The first stage, characteristic of children 2 to 4

years of age and of some cases of schizophrenia, is called the scribbling or tracing stage. The lines are either disregarded for random scribbling or simply traced with the pencil. The second stage, emerging in children 3 to 5 and in early stages of psychotic development, produces the play corner. Here manikins, rabbits, cats, and so on are drawn under the curves. This use of the lines often goes along with closures, joining lines together to produce a closed space, which may be typical of a "shut-in" personality. A tendency to excessive closing of lines which results in spiders' webs or nets has been found to parallel an increasing inability to deal with normal life situations. The third stage, called subject-object identification, appears in the normal child of 7 to 11 years and sometimes up to puberty. The lines now become, at once, parts of the imagination. From 8 to 9 years the "world" is real and rich in concrete experience and is incorporated into the drawings. This same type of completion is shown in certain types of mentally disturbed patients for whom the objective world is submerged behind subjective delusion. The fourth stage, the struggle with outer reality, is characteristic of the pubertal child, who is suddenly conscious of direction and self-conscious about what to do. He experiences the lines as restrictions to impulsiveness. Modernistic and surrealist drawings may appear at this stage and are indications that the environment cannot be assimilated or digested.

Three practical methods of evaluation are outlined, on the basis of psychoanalytic interpretation of the manifest content, on the basis of form, and on the basis of the objectivity or subjectivity of the contents. The last is unique to Helliersberg and consists of plotting the contents on a chart divided into two areas, an objective sphere (O.S.), and a subjective sphere (S.S.). In normal functioning in the adolescent at least 29 per cent of the contents appear in the O.S.; in the normal adult, at least 35 per cent. If the percentage of scores in the O.S. corner is above 55 per cent or below 30 per cent, then the clustering in the subjective sphere becomes significant.

The author has made an interesting intercultural study using Pueblo Indians as subjects. With this group the manner in which the test reveals cultural factors was manifested, and yet the indi-

viduality of the responses was also demonstrated. Each individual was found to have a personal way of looking at, and dealing with, reality. Young people passing through the most severe disturbances of adolescence, or the mentally sick who bore characteristics that would be known as paranoid in our culture were found to give more collective images and symbolic features in their drawings than individual associations.

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CHAPTER XX

THE MOSAIC TEST

A TEST originating with Lowenfeld in 1929, the Mosaic Test, has not been extensively used in the United States, but has become part of the regular battery of personality tests in many British clinics. The Mosaic Test bears a relationship to Lowenfeld's World Test (cf., p. 468) like that of the Rorschach to the Thematic Apperception Test. The Mosaic Test reveals more the personality structure; the World Test, more the content of disturbing complexes.

Lowenfeld's materials for the test consisted of 465 small wooden stones in 6 colors—black, white, red, blue, green, and yellow—and in 5 shapes—squares, diamonds, triangles of right angles, isosceles, and scalene forms. The exact sizes of her blocks are not published. Diamond and Schmale (1), working with 300 blocks, 10 of any one shape and color, used Lowenfeld's 6 colors and the same shapes, except that they replaced the scalene triangles by rectangles. Their blocks had the following dimensions: squares, 1" by 1"; right triangles, exactly $\frac{1}{2}$ the squares; isosceles triangles, 1" along each edge; rectangles, $1\frac{1}{2}$ " by $\frac{1}{2}$ "; diamonds, $1\frac{1}{2}$ " by 1". They were all $\frac{3}{16}$ " thick. All examiners have used a wooden tray for the test, the Diamond and Schmale board being 18" by 26", and painted in a dull, muddy cream color.

The instructions for the test are simple, "Make anything you like out of the pieces." Only Diamond and Schmale report using color-blindness tests as a preliminary; in their case, the Ishihari Plates. Time, while recorded, is not limited. Lowenfeld and Kerr (3) required that the final product be pleasing to the subject, but Diamond and Schmale felt this was an undesirable restriction, inasmuch as one third of their cases mildly or actively disliked the patterns produced. They also warned examiners that the

technique of administration should remain as constant as possible, since minute differences in instructions, the attitude of the examiner, and his responses to the subject's questions (which should be evasive) vary the significance of the results considerably.

Himmelweit and Eysenck (2) tabulated their results in the test on a record sheet, noting:

1. the order in which the colors are introduced;
2. the method of construction; and,
3. the patient's behavior during the test.

They supplemented their data with the responses to three questions:

1. Had the subject planned the pattern beforehand?
2. What suggested the pattern?
3. Was the subject satisfied with the result or not?

On the other hand, Diamond and Schmale made detailed notes of the attitude of the subject, the method of selection of the pieces, the manner of construction, rejected patterns (sketches) and verbalizations. In addition, they used a series of 9 rating scales for recording, covering the following items:

1. ideation—the facility of thinking up an idea;
2. willingness to cooperate;
3. attention to the task at hand;
4. anxiety, specific and non-specific to the test situation;
5. carefulness of selection;
6. carefulness of placing;
7. persistence of the subject's goal;
8. manner of completion;
9. self-approval of the results.

In analyzing their data, they distinguished five types of pattern. Their attention was centered, not solely upon the mosaic, but, upon the Gestalt formed by the behavior of the subject, his introspections, his attitude, and all other aspects of behavior. These Gestalts were graded into:

1. the *normal mosaic*—the product of a spontaneous idea, executed within the limits of the materials, using both the color and the form to produce an objectively recognizable Gestalt;

2. the *mildly defective mosaic*—a poor but recognizable form configuration; the use of color but in a poor or otherwise unsatisfactory manner; multiplicity of unrelated designs; peculiarities of emotional reaction or other behavior; preoccupation with certain technical aspects of construction, and others;
3. the *moderately defective mosaic*—with a major defect, yet with evidence of the achievement of an organized Gestalt—disregard of color, rejection of color, using only black and/or white; satisfactory color with defective form;
4. the *severely defective mosaic*—no, or only slight, evidence of organization.
5. the *unclassified mosaic*—feebleness of production, lack of cooperation, or some other factor.

In contrast, Kerr (3) based her analysis of the results upon the mosaic achieved. She distinguished three categories of final products: 1. abstract, subdivided into three groups: (a) compact, (b) scattered, and (c) intermediate types; 2. concrete or representational; and 3. incoherent. Her interpretations were deduced from the above general types, the interrelations of the colors and the shapes, whether the parts of the pattern achieved an over-all unity, whether they pulled in opposite directions, the position of the pattern on the tray, and so on.

Two validation studies have been reported to date (2, 3). The first consisted of six experiments with various groups in which the test results were matched with character sketches by a judge who had not seen the subjects. The results have been tabulated in Table XVII.

In the second study, Himmelweit and Eysenck (2) gave the test twice to two different groups of subjects (Group I—50 male neurotics; Group II—100 male neurotics, divided into three subgroups: (a) hysteria, (b) dysthymia, and (c) effort syndrome). Each subject was given one mosaic test, then a 30-minute fatiguing test in connection with another experiment, a second mosaic test, and a personality questionnaire. In the first part of the study, using Group I subjects, a psychologist (Traill) was given 50 sets of 2 mosaics and wrote character sketches on the basis of these mosaics. The sketches, grouped in fives, were given for matching to psychiatrists familiar with the patients. The average number of correct matchings was 33 per cent, a significant difference from

TABLE XVII

RESULTS OF SIX EXPERIMENTS WITH BLIND MATCHING OF MOSAIC TEST
RECORDS WITH CHARACTER SKETCHES

(After Kerr, 3)

<i>Experiment</i>	<i>Subjects</i>	<i>Results</i>	<i>Comments</i>
I	10 adults	$C = 0.86 \pm 0.025$	
II	10 miscellaneous: mental defective children; neurotic children; highly intelligent but neurotic adults; stable adult; insane adult.	$C = 0.96 \pm 0.02$	
III	10 normal adults	$C = 0.89 \pm 0.14$	
IV	10 normal and 10 neurotic children	15/20 correct identifications	3 mistakes doubtful (children, though normal, showed signs of emotional disturbance)
V	3 neurotic children 3 mental defective children	5/6 identified	
VI	10 normal and 10 psychotic adults	16/20 matched	2 normal considered doubtfully stable (both under emotional strain at time of test)

the 20 per cent expected by chance. The second validation, using the same subjects, consisted of 7 sets of 5 matchings each between the mosaic results and clinical notes without identifying data. The same psychologist made 21/35 correct matchings. In 5 out of 7 of the sets of matchings, the coefficient of contingency was significant. In the third validation, matchings were made between the mosaics and the personality questionnaires. In this experiment the psychologist failed to secure above chance success.

The reliability, as indicated by the number of pieces and the number of colors used in each of the two tests from Group II, did not prove high ($r = +.646 \pm 0.04$, and $r = +.490 \pm 0.05$, respectively). This might be accounted for in part by the criteria chosen for measuring the reliability.

The Mosaic Test has been shown to have diagnostic significance in discriminating various disorders of personality. Wertham and Golden studied over 1000 cases, including adults, children, normals, psychotics, neurotics, and criminals. By blind interpretation and later comparison with clinical records they established characteristics of each group as shown in Table XVIII. The findings of Diamond and Schmale are also listed in the same table. It is recognized that there may be discrepancies between the lists in that the groups studied are not equated in numbers, sex, age, and other characteristics.

TABLE XVIII

COMPARISON OF MOSAIC PATTERNS IN DIFFERENT CLINICAL GROUPS

	<i>Wertham and Golden</i>	<i>Diamond and Schmale</i>
<i>Normal</i>	Relatively many pieces. Different shapes. Different colors. Design harmonious in color. Design distinct in configuration. Either concrete or abstract.	Great variation in method of attack, the use of color and form, and the types of patterns and objects represented. Most common mosaics: houses, flags, flowers, geometrical figures, animals, simple humans and abstracts. Often several related objects or whole scenes. No observable relation of mosaics to intelligence. Mostly little ingenuity—simple and unimaginative designs. Normal or mildly defective Gestalt.

TABLE XVIII
(Continued)

COMPARISON OF MOSAIC PATTERNS IN DIFFERENT CLINICAL GROUPS

<i>Category</i>	<i>Wertham and Golden</i>	<i>Diamond and Schmale</i>
<i>Schizophrenic</i>	Overemphasis on formal principles of organization, such as symmetry and repetition. Designs often simple. Exaggerated and rigid symmetry in both form and color. Designs usually abstract. When attempt concrete, an unrealistic and vague exaggerated formal schematization. Do not use color realistically. Color often disregarded and used indiscriminately. Use form more than color.	Very cooperative, as most psychotics. Usually highly abnormal. Active color rejection in use of black and/or white. Disregard of color, using pieces for form. Excessive literality. Abnormal condensations. Bizarre choice of subject. Bizarre configurations. Abnormal symbolisms. Blocking, incompletions. Super-symmetry. Stone-bound. "All-over" patterns. Moderately to severely defective Gestalt.
Early disease		Extreme resistance. Multiple or unrelated patterns.
Advanced disease	Scattered, incoherent jumbles. Only rudiments of organization.	Defects in form configuration. Third - dimensional (pieces on edge).
<i>Organic Brain Disease</i>		
Diffuse organic brain syndrome group		Preserve color responses. Moderately to severely defective Gestalt.
Chronic encephalitis		Strikingly similar to schizophrenic at times. Color disregarded.
Post-traumatic encephalopathies		Multiple patterns, each with minor defects of organization.

TABLE XVIII
(Continued)

COMPARISON OF MOSAIC PATTERNS IN DIFFERENT CLINICAL GROUPS

<i>Category</i>	<i>Wertham and Golden</i>	<i>Diamond and Schmale</i>
Sub-cortical	Influenced by shape of each individual piece. Fixation on piece once it is put down. Monotony in color. Stone-bound. Pattern on a mere mechanical or automatic level.	
Cortical	Use few pieces. Make simple designs. Attempt to represent such geometric forms as a circle, cross, or star. Use color indiscriminately. Choose shapes inappropriate for goal. Inability to achieve a good configuration outstanding.	
<i>Affective Psychoses</i> Depressive	May not be able to achieve a simple design. Black and dark blue indicate depressive moods when other colors are also used; black and white alone are not characteristic, but indicate schizophrenia.	Ambivalence to the task. Self-criticism. Not dark colors, but retardation and feebleness of production. Moderately to severely defective Gestalt.
Hypomanic		Dispersed patterns, carelessly organized. Tendency to use bright colors.
Manic	Massed and jutting red pieces. Relatively simple designs. Use fewer than normal. Conspicuous use of red indicates excitement or stimulation in the emotional or sexual sphere.	Lack of cooperation. Aimless shuffling of pieces. Moderately to severely defective Gestalt.

TABLE XVIII
(Continued)

COMPARISON OF MOSAIC PATTERNS IN DIFFERENT CLINICAL GROUPS

<i>Category</i>	<i>Wertham and Golden</i>	<i>Diamond and Schmale</i>
<i>Paraphrenic-Paranoid Type</i>	Agglutination of a few pieces. Also found in simple schizophrenics of post-adolescent age.	No significant relationships noted.
<i>Mental Deficiency</i>	Number of small, simple, compact and completed designs. Pieces of one shape. Color—one of each available. On lowest levels cannot achieve even the above.	
<i>Disorders of Consciousness</i> Delirium	Designs show no order nor organization and do not achieve meaningful configurations although there is effort.	
Epileptic twilight states	Peculiar, weird designs, well-coordinated.	
<i>Simulation and Deception</i>	Use many shapes and colors. Fail to indicate intended object. Final result general jumble. Could be genuine only in most severe intellectual deterioration or profound confusion.	
<i>Epilepsy</i>	No uniform style, though unhealthy. Number of small, simple patterns. Sometimes sub-cortical stone-bound. Sometimes close to edge of tray. Clinging to the margin indicates fear and anxiety.	

TABLE XVIII
(Continued)

COMPARISON OF MOSAIC PATTERNS IN DIFFERENT CLINICAL GROUPS

<i>Category</i>	<i>Wertham and Golden</i>	<i>Diamond and Schmale</i>
<i>Psychoneurotic</i>		Attitude: not interested. Make stalling remarks. Rationalize difficulties. Ask persistent questions. Sometimes extreme resistance. Some "normal" patterns. Some have minor defects. Solid-colored patterns common. Two patterns (one abstract, one concrete) common. Rigid and relatively independent color patterns sometimes. Normal to mildly defective Gestalt. In those in whom is a question of schizophrenia—moderately to severely defective.
<i>Behavior Problems</i>		Similar to the psychoneurotic. Normal to mildly defective Gestalt.
<i>Psychopathic Personalities</i>		Only a few cases. Gross abnormalities. Usually distinguishable from schizophrenic. Moderately to severely defective Gestalt. Attitude: very interested.
<i>Normal Children</i>	More concrete objects than adult. Achieve a satisfying configuration with a minimum of means. May disregard literalness of shapes and use them freely to resemble objects. May	

TABLE XVIII
(Continued)

COMPARISON OF MOSAIC PATTERNS IN DIFFERENT CLINICAL GROUPS

<i>Category</i>	<i>Wertham and Golden</i>	<i>Diamond and Schmale</i>
	<p>approach representation of object expressionalistically: e.g., "A piece of machinery with moving parts" by a 5-year-old. Apt to attempt representations difficult or impossible. Use color decoratively rather than realistically; adults use it decoratively only in abstract designs. Tendency to dramatize and animate—dynamic concepts. Use simple designs as starting points for fantasy. Another tendency is to see open space surrounded by pieces as the figure. The normal response of the 3-year-old is to distribute the pieces over the entire area of the tray and thus make an over-all pattern.</p>	

In summary, it may be noted that, in addition to the behavior of the subject during the test and the satisfaction noted on completion of the pattern, the designs created may be classified according to the following observable characteristics:

1. the number of designs;
2. the coherence or incoherence;
3. concreteness or abstraction;
4. harmony of the design as a whole;
5. completeness or incompleteness;
6. meaningfulness or emptiness;

7. simplicity or complexity;
8. compactness or looseness;
9. distinctness of configuration;
10. realistic or schematic nature of design;
11. static or dynamic representation;
12. configuration by pieces or by space enclosed;
13. position in reference to tray;
14. number of pieces;
15. choice of color;
16. choice of shapes;
17. emphasis on form or color;
18. production of simple geometric design;
19. appropriate choice of shapes for intention;
20. evidence of fixation in form, color, or piece put down (stone-bound);
21. symmetry;
22. repetition; stereotypy;
23. relation of design to what subject says.

This test satisfies so many of the criteria of a good projective technique that it would seem to merit much further development. Its present usefulness is impaired by the lack of extensive research studies with various clinical groups of subjects and by the absence of standardized methods of interpretation, which are, however, difficulties that enthusiastic clinical psychologists may in time overcome.

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CHAPTER XXI

VOICE AND SPEECH

It is surprising that our most important means of communication, the voice, which in everyday life enters so strongly into our judgments of others, should have been utilized so infrequently in a controlled scientific manner for the determination of personality characteristics. The explanation perhaps lies partly in the difficulty of separating the voice and speech. Sapir (24) stresses the importance of such a separation in analytic processes, defining voice as the expressive movement, the external form of oral communication, an individual pattern composed of pitch, rhythm, intensity, inflection, volume, and vocal mannerisms. This is distinct from speech, which is the content of communication, made up of the subject matter, the vocabulary, the language or dialect, the grammatical constructions, and the style. In everyday life voice and speech are seldom separate, except in singing. When a separation is accomplished, as in the recording of the spoken responses to tests, it is usually the speech that is isolated. This can be done because we have verbal symbols to represent speech. We do not have a comparable simple code for producing graphic voice characterizations. Although such a scheme might be developed it would need to be complex and would require extensive practice for sufficient mastery to record the modifications of the voice with a speed paralleling the speed of speaking.

A second factor accounting for the poverty of inquiry into the voice perhaps rests in the difficulty of isolating the voice from other expressions of the personality in a practical way. This can scarcely be accomplished reliably except through blind analysis of recordings where the content is constant, or where special efforts are made to isolate the voice from other expressions by rigidly objective methods of observation and interpretation. It is

nearly inevitable that, in the latter, facial expression, gesture, and content will contribute to the impression of the voice. Recordings, however, as Moses (18) points out, sacrifice the most delicate details of pronunciation, jaw movements, proportions of thoracic and abdominal respiration, and so on, which are specific aspects of vocalization. It is also true that recordings of oral reading or of oral repetition of memorized material distort the natural voice. The artificial structuring of the situation through the impersonal content and the assigned task, and the mechanical distortion introduced in even the best of recordings introduce voice characteristics infrequently observed in ordinary speech. Recordings have the advantage, on the other hand, of permitting repetition and of making possible the securing of the judgments of others.

A further problem in the analysis of the voice is the stereotype characteristic of the regional, national, and educational background of the individual. This stereotype is analogous to the "school copy" of handwriting, which can be discriminated from the individual characteristics of the writing more easily than the adopted voice patterns can be isolated from the personal voice traits. Voice is capable of an infinitely greater variation in form than handwriting, since there is not a mechanical restriction upon the voice such as is caused in writing by the pen and the paper. Only a specialist who is trained in the cultural and geographical characteristics of the voice is equipped to differentiate their evidences from the reflections of the individual personality in the voice. In a country such as the United States where so many varied backgrounds are represented even within relatively small communities, the immensity of the task of gaining competence in the sociology of the voice is sufficient to discourage even the most resolute investigator.

A further discouragement to the development of a science of voice analysis is the complexity inherent in observation of the voice because of its form. Moses (18) has separated twenty-one main categories of voice differences, which will be described later, in the most complete list at present available. The range of voice modifications within almost all these categories is large, and many of them cannot be readily distinguished by the average listener without the assistance of a variety of physical instruments.

The securing of the necessary equipment could scarcely seem justifiable by the amount of information one might hope to secure about the personality from voice analysis, since, at the best, in controlled experiments, one might gain data only on the structure of the personality without fantasy content, unless the test required the reading of material which might be emotionally charged for the subject. This would permit the relating of voice changes to specific stimuli. To the author's knowledge the reading aloud of standardized emotional material has not been purposely used in research into the voice characteristics.

On the other hand, speech, which can be recorded verbally, is not subject to the same observational difficulties. Since, also, a written record of the speech may be secured, the data for analysis are more convenient for interpretation. As a matter of fact, the analysis of speech is a part of the interpretation of many projective techniques such as the Thematic Apperception Test, in a more limited sense the word-association test, and the Tautophone Test. Since the formal aspects of speech interpretation are discussed in other contexts, only brief mention of some independent studies will be made here.

Returning to a consideration of the voice, we find that most studies of reflections of the personality in the voice have been concerned with the ability of untrained subjects to judge characteristics of speakers. The radio provided an early experimental medium which was used by both Pear (21) and Allport and Cantril (1). The former had nine speakers read a passage from Dickens over the air and requested listeners' descriptions of the personalities of the speakers. The responses seemed to be more right than wrong, and included many physical descriptions of the participants. Pear concluded that "no speaker's appearance was at variance with his or her voice," although he failed to quote the evidence for his conclusion. Allport and Cantril used the radio, as well as the laboratory, in accumulating the judgments of 587 individuals about the relationships between voice and personality. Radio listeners were for the most part able to match the voices of speakers, each reading the same material, with their occupations, and to give some accurate judgments of the personalities of the speakers. The experimenters concluded that the

voice is capable of conveying information regarding the outer and inner characteristics of the personality, but that there exist voice stereotypes so distinct that listeners tend to associate certain personal characteristics with certain types of voices and to subsume several features of the personality under these stereotypes. These fixed standards of judgment produce more consistency than accuracy in the appraising of speakers. The consistency and accuracy of opinion on the more highly organized and deep-seated personality traits, such as passivity-aggression, as measured by "objective" personality tests, is superior to the appraisal of the more superficial features of physique and appearance. When a curtain screening the speakers from the listening group of judges was substituted for the radio, the results of judging were 7 per cent higher, indicating that the radio created distortion of the voice.

Seeing in the amateur radio a unique experimental opportunity, Kelly (9) sent eleven personality rating scales covering 36 traits to each of 50 "ham" operators, asking them to send five scales to other amateurs "known" but never met personally, to give five to personal acquaintances and to rate themselves on the remaining one. Correlations between the average personal and average amateur ratings ranged from $-.24$ to $+.61$, with a median of $+.22$. As might have been expected, the self-ratings agreed more closely with the judgments of personal acquaintances than with those of the operators. Such a study is bound to be handicapped by the deficiencies of rating scales, especially when they include so many items and are marked by non-professional raters.

Recordings and transmission over a public-address system have also been used to present voices for evaluating. Fay and Middleton (7), with 12 high-school boys of varying I.Q.'s as subjects, none of whom were known to, or seen by, the listeners, obtained a small but positive correlation between voice and ratings of the I.Q. ($r = +.33 \pm .01$). Psychology students, who listened to the voices over a public-address system, made the ratings. This experiment confirmed the hypothesis that there are some voice stereotypes of superior and inferior intelligence. Some voices made possible greater reliability in judgment than others. Earlier, and by different methods, Michael and Crawford (14) had shown

that the inflection of the voice is a reasonably good measure of ability. Fay and Middleton (6) also used a public-address system to transmit voices for rating according to the six Spranger types of personality, theoretic, social, aesthetic, economic, political, and religious. Little consistency in judgment was obtained, although some voices were stereotypes and produced more uniformity of judgment than others.

Dusenbury and Knower (5) produced twenty-two records of the voices of three participants in their experiment. Each person was asked to feel each of eleven emotions in turn and then to repeat the alphabet under each condition. Matchings of voice and emotion by four groups of subjects had a mean average accuracy of 82 per cent. The value of such an experiment for clinical psychology is greatly diminished by the highly artificial quality of the material analyzed. Hearing both recorded and actual voices, thirty untrained judges in an experiment by McGehee (13) proved to be uniformly poor in estimating age, height, and weight on the basis of the voice, although again greater consistency than accuracy of judgment was manifested. Wolff (27, 28), in connection with other experiments, recorded the voices of a number of people pronouncing the same sentence. Later the subjects listened to records containing their own voices, the voices of friends and of strangers. They could recognize their friends' voices but not their own, even though as few as four voices including their own were given to them for identification. When the subjects were asked to give descriptions of the characters of the speakers a marked similarity in characterization of one and the same voice by the various subjects was noted, although the unconscious self-judgment differed from the judgments of others on the same voice as well as from the judgments passed by the owner of the voice upon others. The self-judgment was more detailed, went deeper into the personality, was strongly tinged with emotion, and tended toward exaggeration in either a good or a bad sense. Wolff concluded that the self-judgment reflected the subconscious wishes of the subject, an idealization of his personality rather than a more objective appraisal, a theory which he supported by his experiments with other forms of expression (cf., pp. 282-85).

Public-speaking classes (e.g., 3, 15) and therapy with indi-

viduals having speech disorders (e.g., 26) have also made minor contributions to the general topic of the relationships between voice and personality, the latter chiefly by implication. Bose (2) is one of the few to study anthropological differences in voice.

As mentioned earlier, Moses has contributed largely to the theory of the interpretation of the voice and has compared voice with personality and body types (Kretschmer, Sheldon, etc.). He has isolated the following variables in voice use (18):

1. *Level of form*, the general impression of the voice, referring especially to the indications of the educational or cultural background of the individual;
2. *Symmetry*, the identical and repeated placement of phonetic units in articulation—tends to suggest well-balanced coordination as well as habits of carefulness;
3. *Range*, of three types: head register, mixed register, and chest register. The normal speaking voice is located in the lower third of the total range and is a mixture of head and chest registers. In moments of excitement, pure head register appears; the chest register marks the true “ring of conviction”;
4. *Basic pitch*, the pitch of the last syllable in a declarative sentence. This has a characteristic relationship to the pitches of the preceding syllables and can be used as a clue to the age and sex of the speaker;
5. *Keys*. The speech melody obeys the same harmonic laws as music—it is in either a major or minor scale, and is optimistic or pessimistic, respectively;
6. *Prevalent register*—a possible clue to the constitutional make-up. “Linear” individuals, variously characterized as “asthenic” or “ectomorphic,” tend to reveal a predominant head register in their voice mixtures; in singing, a lyrical quality. By contrast, the “pyknic” or “endomorphic” tends to have a dramatic character in the singing voice, due to a prevalent chest register. The “asthenic” jumps from head to chest;
7. *Stress, emphasis*—the *stress* gives dynamic and musical accent to one syllable; the *emphasis* may involve a whole thought, and is expressed by a prevailing chest emphasis;
8. *Pathos* is the genuine emotion in the voice. True emotion produces speaking which is easier to interpret. Voices with natural chest resonance are often regarded as “honest,” “warm,” and “sympathetic,” etc. In voices with a natural predominant head register, emphasis of the chest register sometimes appears as an indication of artificiality or insincerity;
9. *Speed*. High speed may indicate fervent activity; slowness sug-

gests concentration and calm, but may also reveal irresolution. Rapidity carries the suggestion of vivacity or excitement; slowness may accompany a merely dull mood. Excessive speed has many causes. Increased speed without rhythm suggests artificiality;

10. *Pausing between words.* When an individual pronounces words rapidly but with marked intervening pauses he emphasizes the rhythm but neglects the melody. This may often accompany a rational, volitional, unemotional trend. Pauses between words may imply either circumspection, lack of concentration, extremely careful thought, or emotional blockage;
11. *Melody.* The grammatical structure of a sentence (e.g. declarative, command, or request) suggests a certain melody. The emotional condition of the individual adds another factor. Greater "sensitivity" may appear in increased melody. The "logical" may stress the dynamic rather than the melodious qualities of speech. In reading, "the subjective-sensuous" tend to read rather slowly and with emphasis on melody, whereas the more "intellective" read with faster time and a flatter melodious curve. It is possible to differentiate between a swinging and a jumping melody. The former is decidedly cycloid, the latter, like schizoid. The epileptic has a very small rigid melody;
12. *Uniformity, monotony.* Uniformity, often the expression of depression, means the repetition of a declining melody. Sentences and clauses start at the same pitch and drop in pitch to end at the same low pitch, covering a small range. Monotony sticks to one pitch and has no melody and is frequently noted in the voices of hysterics. It carries a definitely pathological implication;
13. *Respiration.* The first noticeable quality of breathing is the intensity. Some speech is characterized as inspiratory, a gasping for air, and is sometimes an indication of lack of control. It may also be associated with excitement. "Wild air" is the use of more air than can be employed in the vibration of the vocal cords. It is based physiologically on disproportionate diaphragmatic and laryngeal coordination and may occur in some emotional conditions. Pleasure or displeasure describes other types of respiration. In pleasure, the inspiration is short and the expiration long; in displeasure it is frequently the reverse;
14. *Pitch of the final syllables.* The declarative sentence usually has the lowest pitch. In the interrogatory sentence the location of the highest pitch varies according to the number of syllables and also according to variations in emphasis. If in the declarative sentences the pitch of the last syllable is not lower than the pitch of the preceding one, it may express diplomacy, irresolution, or "want of principles." Exact pitch at the end of a declarative sentence may

serve as a clue to the stability, the power of resistance, the constancy, the severity or insensibility of the personality. The pitch of the final syllables usually indicates the basic pitch. Many characteristic variations can be found. Some speakers, especially talkative individuals, do not lower their pitch, but make a gliding transition in melody between sentences and clauses;

15. *Quantity*, which conveys clues as to the general health, as well as to the condition of the vocal organs;
16. *Exactness*, a characteristic of enunciation. Careless enunciation may have different interpretations; it may be based on ignorance, lack of interest in maintaining conventional standards or a break through of urges or impulses which disturb normal articulations. Such speech, called "doughy," which lacks sharpness and precision, sometimes provides a clue to lack of self-discipline, to rudeness or to sensuality;
17. *Melism*, the individual touch which gives speech its melody, created by the anticipating and stimulating of the reaction of the addressed person. This is the typical symptom of a social relation or urge for communication. The schizoid manifests less melism than the cycloid;
18. *Loudness* frequently provides an indication of emotional factors, of momentary emotional adjustment, and also of emotional congruence or emotional "honesty";
19. *Rhythmic prevalence*. Lively motion is always expressed rhythmically, whereas rigid inanimateness, pedantry, and narrowness create timed changes rather than rhythm. Attention should be given to the characteristic rhythms, their degree of freedom of modulation, and to the occurrence of opposed extremes which may be called hypo-rhythms and hyper-rhythms.
20. *Nasal resonance*. The sex urge, libido, and impulse for close human contact tend to evoke an increased swelling of the mucous membranes in the nose. This results in a change of the voice that is in a striking contrast to the expression of hatred or the urge to be left alone which increase the intranasal space. The enlargement may be persistent. Deep feeling and sexual irritation increase the nasal sound. The sex urge leads to the stressing of vowels and neglect of consonants to the point of almost mispronouncing them.
21. *Individualities*, under which category an attempt is made to summarize the individual habits, peculiarities, and outstanding characteristics, which quite often impress us more than all the clues mentioned above.

Such a schema has the weakness of looseness of definition in many of the items, but is a creative contribution to the study of the voice, a first step toward an objectively measurable analysis.

Three years previous to the publication of the above, Newman and Mather (20) produced a classification system in some respects comparable to that of Moses, but also including items for the analysis of speech. An abbreviated form of their list of criteria is included here both for its own suggestive value and as a background to the results they secured in analyzing the voice and speech in three types of patients.

1. *Articulatory movements*: pronunciation of stop consonants *t, d, k, g*—lax or vigorous;
2. *Pitch*:
 - a. Range of pitch (at ends of sentences): wide or narrow;
 - b. Pitch changes:
 - i. General character: gliding or step-wise;
 - ii. Frequency;
 - iii. Variety of patterns: diversified or stereotyped;
3. *Emphatic accent*:
 - a. Type: rhetorical or contrastive;
 - b. Frequency;
 - c. Types of references receiving emphatic accents;
4. *Tempo*:
 - a. Individual words: drawled or choppy;
 - b. Stream of speech:
 - i. General speed: slow or fast;
 - ii. Changes of speed:
 - a'. Frequency of change;
 - b'. Manner of change: gradual, sudden;
 - c. Pauses:
 - i. Type: prosodic (pauses between phrases) or hesitating (pauses within phrases);
5. *Resonance*:
 - a. Placement: oral, pharyngeal, nasal;
 - b. Glottal activity:
 - i. Type: glottal closures, glottal rasps;
 - ii. Position in statements: at beginning, at end;
 - c. Changes in volume:
 - i. Frequency of change;
 - ii. Manner of change: gradual, sudden;
 - d. Timbre: hoarse, shrill, breathy;
6. *Vocabulary and phrasing*:
 - a. Level of style: colloquial, formal, pompous;
 - b. Words referring to concepts of degree:

- i. Type: extreme (such as "wonderful," "terrible"), neutral (such as "nice");
 - ii. Frequency;
 - c. Tag phrases, such as "you see";
 - d. Repetition of phrases, and of phrase patterns;
7. *Syntax*:
- a. General features of syntactic structure:
 - i. Coherence: tight, loose;
 - ii. Progression: continuous, broken;
 - iii. Elaboration:
 - a'. Degree of syntactic elaboration: rich, meagre;
 - b'. Variety of techniques used for elaboration;
 - b. Statements:
 - i. Type: statements consisting of a word, of a phrase, or of a total predication;
 - ii. Length;
8. *Response*:
- a. Rapidity in initiating response;
 - b. Length of response, in terms of the number of statements;
 - c. Relation of response to question: rapport with question throughout response; rapport only at beginning of response; response-avoiding question; response unrelated to question;
 - d. Interrelation of statements in response: clustering about a single theme; progressing from primary to secondary themes; jumping from one theme to another;
 - e. Character of references in response:
 - i. References to interlocutor;
 - ii. Proper names, titles, dates, numbers;
 - iii. Apologies, corrections, interrogations;
9. *Accessory vocal activity*: sighing, yawning, coughing, clearing the throat, laughing, weeping;
10. *Special features*:
- a. Comparison of reading with spontaneous speech;
 - b. Peculiarities associated with particular contents;
 - c. Recurrent themes.

The authors used this outline in summarizing the voices and speech of patients with classical depressions, states of dissatisfaction and gloom, and manic syndromes, using recorded interviews for obtaining their data.

Their findings are outlined in Table XIX.

TABLE XIX *

VOICE CHARACTERISTICS IN THREE CLINICAL GROUPS

CRITERIA OF ANALYSIS	DIAGNOSES		
	<i>Classical depressions</i>	<i>States of dissatisfaction and gloom</i>	<i>Manic syndromes</i>
1. Articulatory movements	lax	fairly crisp	vigorous
2. Pitch range	narrow	wide	wide
3. Pitch changes	stepwise; infrequent	gliding; frequent	gliding; frequent
4. Emphatic accents	absent or rare	infrequent	frequent
5. Speech tempo	slow	average	rapid
6. Pauses	hesitating; frequent	—	prosodic; frequent
7. Resonance	pharyngeal, nasal	pharyngeal, nasal	oral, pharyngeal
8. Glottal rasping	present	present	absent
9. Level of style	colloquial	colloquial	elevated
10. Degree of concepts	neutral; infrequent	neutral; infrequent	extreme; frequent
11. Syntactic elaboration	meager	—	rich
12. Syntactic technique	limited	—	diversified
13. Initiation of response	slow	quick	quick
14. Length of response	short	varied	long
15. Statements in response	developing single theme	developing single theme	passing from one topic to another
16. Rapport with question	throughout response	throughout response	at beginning of response

* S. Newman and V. G. Mather, Analysis of spoken language of patients with affective disorders, *Amer. J. Psychiat.*, 94 (1938), p. 941. By permission.

Turning to the specific topic of speech and personality, we find it generally true of studies involving speech that the analysis of speech is subsidiary to some other goal, such as the investigation of fantasy, or the demonstration of emotional disturbance, or the securing of information. Few researches have started out with the goal of describing speech patterns themselves. Manson and Pear (12) set forth this as an aim in their article in which they stressed the necessity for studying both formal (e.g., interview) and informal conversation. They suggested observation of the beginnings of conversation, the interruptions, the emotional tone projected on to the speaker by the conversational group, the tact of the speaker, avoidances in the conversation and the content. Krechel (10) would add to this list the manner in which the individual understands or experiences words, and the constructions and patterns employed in the speech, of which he outlined three: the egocentric, where the individual speaks to express his ego rather than to communicate with his auditor; the material, where the person is primarily concerned with the content of the discussion, irrespective of its effect on others; and the selective, where the speaker chooses words, constructions, and content in accordance with the taste and attitudes of the listener. Lloyd (11) described the theory that the "style of speaking and writing seems to be an unwitting expression of patterned tendencies toward action," and thus may reveal these patterns as well as the value systems of the individual. Sanford, who has made an exhaustive review of the literature on speech and personality (22), illustrated their relationship by two case studies (23), in which he discussed the speech qualities of two college sophomores. Using an extensive list of grammatical rubrics, he obtained 234 differentiation scores which enabled him to characterize the students' styles of speech, which, he claimed, appeared also to be characterizations of their personalities.

By way of summary, voice and speech have the advantage to the investigator of accessibility for study. In this respect they are like writing. It appears that the chief values in studying them are as supplemental techniques, which, especially in the latter instance, may provide us with important insights. As Jones has said in connection with his summary of the place of voice analysis

in the Adolescent Growth Study of the Institute of Child Welfare, University of California (8): "Only when we have used a discriminating combination of methods seen in the light of data from the individual's life history, can we feel at all secure with regard to errors of omission or commission in interpretation derived from a single technique."

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PART IV

PLAY, DRAMA, AND RELATED
TECHNIQUES

CHAPTER XXII

PLAY

A DIAGNOSTIC method, almost completely restricted to use with children, arises out of their natural activity, play. It is a particularly suitable medium for the study of the child, "the playing animal par excellence" (59), because of the spontaneity with which he will participate in play. The use of play for the investigation of the personality parallels the development of dynamic theories of the child's motivation for play. Kanner has reviewed some six of these theories in his excellent summary of techniques in play therapy (68). He has described briefly four older theories, the first three of which, especially, have modern support, generally in the "popular mind." The first of these he calls the "surplus-energy" theory, represented by an apt quotation from Schiller (109), "the aimless expenditure of exuberant energy." The second of these is the "instinct-practice" theory of Groos (53), which posited that the child plays because of an instinct to serve the practice of education, as a means of preparing himself for the activities of adulthood. The third, represented by Lazarus (73), is that play is the response to a "need for relaxation." The fourth, a phylogenetic theory, in which it is asserted that play follows a recapitulation of the evolution of the race, was proposed by Hall (54). In addition, Kanner has outlined two newer theories, which might be described as more specifically dynamic: the "catharsis" theory, based on psychoanalytic principles, that the child uses the play experience as an outlet for emotional tensions, and the "self-expression" theory, summed up by Mitchell and Mason (88), which explains play as a consequence of the need for satisfaction for specific motives of the self. Wlder (118) would claim that play can have many specific meanings, but that it is dominated by the Freudian "pleasure principle," and is an evidence of a

repetition-compulsion in that the child divides excessive experiences into small quantities which are then reattempted until he has assimilated them. While supporting the point of view that play expresses the emotions, Lowenfeld (86) would also describe it as an opportunity for communication of ideas, an antecedent of talking. Bender (12) and Bender and Schilder (14) would add another aspect to the derivation of play, that it is a response to the development of the psychophysiological organization and an experimentation with the form of the organism and its motor possibilities in space, which is, in many respects, comparable to the theories underlying the Montessori approach to education (89), in which a child is helped systematically to orient himself to the sensations coming from the respective sense organs.

To a great extent the present psychological applications of play in personality investigation owe their origin to the earlier use of play in therapy with children, mostly in psychoanalysis. The first recorded use of play in therapy was in the case of Little Hans, a phobic 5-year-old-boy whose play was analyzed by Sigmund Freud (45) from reports by the father. The first case report of child analysis through the medium of play was in a paper by von Hug-Hellmuth (64), who described play as a basic part of child analysis before the age of 7 years, and a bridge to verbal communication after that time. Since then child analysis has grown to considerable stature, especially through the efforts of Anna Freud (43, 44) and Klein (69, 70). The former, believing that the super-ego of the child is weak and needs development and strengthening, and reflecting, perhaps, her own background as a teacher, has consistently emphasized the educative aspects of child analysis, as did von Hug-Hellmuth, who called her method "psychoanalytic education." A. Freud interpreted play as the manifest content of latent, unconscious motivation, and gave to the analysis of play a status comparable to dream analysis in the case of adult psychoanalysis. She emphasized, however, the emotional relationship of the child with the analyst as the basis of therapy and thus placed the building of rapport before interpretation of the meaning of the play to the child. On the other hand, Klein, who published the first account of a systematic play technique (69), regarded the super-ego of

the child as developing early and the ego later. She therefore emphasized the necessity of making early interpretation of content, in order to reduce the anxiety created in the child by an early and overly severe super-ego. These two approaches stand today as the bases of child analysis through play. Since the time of their initiation many other approaches to child therapy have been introduced, some of them direct outgrowths of psychoanalysis, others of them relatively, although not completely, independent. Comprehensive reviews of the historical development of play therapy will be found in Rogerson (103), Kanner (68), and Traill (117).

Although consideration of therapy is beyond the purposes of this volume, in the case of play it is in many instances impossible to separate therapy and diagnosis completely, since the two processes are integral parts of one unitary application of play. Hence a brief summary of some of the other methods of treatment using play will be given. As a consequence of Rankian therapeutic treatment of adults, in which the emphasis was especially upon the present and upon the dynamic relationship between the therapist and the patient, a method of child treatment was developed which has become known as "relationship therapy." This approach is well illustrated by Taft (114), Allen (3, 4), and Landisberg and Snyder (72). The distinguishing marks of this method are free play except for restrictions placed upon time and upon injury to the property and person of the therapist, and interpretation only of material that relates to the momentary attitudes of the child toward the therapist. This is to be distinguished from John Levy's "relationship" therapy (35), in which interpretation is made of the attitudes toward the psychiatrist in terms of what they reveal about characteristic attitudes in relationships with other people.

Lowenfeld (85-87), while acknowledging some debt to psychoanalysis, and while using a variety of approaches, some adapted from analysis, has developed what she calls "direct projection therapy," which involves mainly the use of the Mosaic (cf. p. 410) and the World Tests (cf. p. 468) and other similar materials. These are employed partly as a means of emotional expression, but for the most part as a means of communication which

permits the child to air his problems. Conversation is built up around the constructions and the verbalization during the process.

Conn (24-29) and Solomon (111, 112), both choosing a more controlled type of play situation, limit the toys used to dolls, sometimes selected by the therapist to represent the child's family, at other times chosen by the child. Solomon, also, has introduced into the play a doll standing for the psychiatrist. The child carries on the conversation for the dolls. Solomon asserts that there are five aspects to such a therapeutic situation: 1. the aeration of the thought processes of the child; 2. the overt expression of hostilities; 3. the alleviation of guilt; 4. the incorporation of therapeutic suggestions; and 5. desensitization by constant repetition.

These representative methods illustrate the uses of play in therapy, which may be summarized as: 1. providing the child with a natural avenue of approach to the therapist; 2. serving as a diagnostic tool for the therapist, in which the child reveals his behavior, his ideas, his feelings, his wishes, his attitudes, and his fantasies; 3. offering a cathartic experience to the child, especially in the release of socially unacceptable impulses and in the discharge of feelings associated with trauma; 4. reducing anxiety; 5. providing a social relationship which is, to the child, both accepting and predictable; 6. giving a child a new orientation to his world and those who populate it; and 7. restoring to a child essential elements of growth of which he has been deprived.

The experience in therapy, having confirmed the psychological significance of play, encouraged the use of play as a research tool. The experiments which have ensued, mostly in the past ten years, might be said to be of two major types. The first type is the descriptive experiments, in which the goal has been to discover and to describe the play of children or aspects of that play, or to compare different groups of children with a uniform technique, or both. The second kind of experiment has been the technical, where the aim has been the setting up of research methods using play, or the evaluating of methods, or both.

DESCRIPTIVE EXPERIMENTS

Naturally one of the first topics to be studied was the play activities of children of various ages. An example of a study of this kind is found in the presenting of a suitcase of toys to 2½-year-old children by Bonham and Sargent (20) to discover their reactions. A second interest was in toy preferences of children. For instance, Horne and Philleo (60) showed that a marked preference for play materials which lead to constructive activity was characteristic of normal children as contrasted with mentally defective children. They found, also, among 75 normal children a somewhat greater avoidance of games and toys leading to more or less prescribed play activities than among the retarded. The normals also spent more time in construction than the 50 mentally defectives with whom they were compared. Howard (63), in a non-statistical treatment of children's preferences for toys and of the fantasies produced in play with a very small range of materials, also found that toys suggesting a limited type of action and limited variety of uses were the least popular, but that older children (in her experiment, fourth-grade children) needed fewer toys for fantasy play than kindergarten children.

A third topic was the description of group play as a means of discovering the social adjustment of children. Typical of these experiments are the researches of Anderson (6), Hanfmann (55), Horowicz and Horowicz (61), Isaacs (65), and Wright (125).

Extension of the normative studies of play to the children of other cultures formed the fourth type of descriptive experiment, best illustrated in the reports of Roheim (104, 105) on the play of children on Normanby Island, and of Erikson on the Sioux (37) and the Yurok (40).

Another stage was reached with the outstanding experiments of D. M. Levy. Attention turned now to the description of specific aspects of play and their interrelationships with other behavior and the personality. Levy's attention was directed especially to the hostility manifest in sibling relationships as revealed by doll play (75, 76, 78, 81). His standard equipment consisted of a steel "amputation" doll to represent a mother, a rubber brother (or sister) doll, a celluloid baby doll, and a toy chair. The child

was told that "the mother has to feed the baby." Clay breasts were affixed to the mother doll, the baby was placed in position and encircled by the mother's arms. The mother was put in the chair, and the doll representing the brother or sister placed near the chair. The child was then told, "Now, this is the game. The brother comes and sees a new baby at the mother's breast. He sees it for the first time. Now what does he do?"

In the first experiment with this technique (75), Levy summarized tentatively the observations on 10 children with mild behavior disorders. He classified the reaction under four types of primitive patterns and modifications of these patterns. The first type of activity was primitive hostility, shown in destruction of the baby or mother by biting, crushing, or dismembering, and in the destruction of the breasts, this last being common in children with feeding problems. This hostility was found to be modifiable to less serious acts such as hurting, or causing accidental falls to the mother or baby, to expressing the hostility in words rather than in actions, to acceptance of the baby by a process of reaction formation, and to lesser hostility to the breasts, such as simple removal. The second activity was possessive hostility, such as removing the breasts and placing them on the doll representing the self, or taking the baby away and making it the subject's own. This was modified by the performance of various mothering acts for the baby other than feeding. Regression was the third pattern to be isolated, indicated by putting the subject doll to the breast after removing the baby, modified by including various activities of the subject doll with the mother, other than feeding. The final type of activity noticed was self-punishment, varying from primitive murder of the doll representing the subject to milder forms of self-punishment and to restoration of the baby to the mother.

Later, Levy described other common behavior in this play situation (76, 78, 81), such as prevention of hostility to the objects in the setup, found most frequently in those who experience overt difficulty in relation to their siblings, and various defenses against hostility such as rationalization, concealment, denial and projection. Explicit in all his analysis was consideration of the sequence of activities, as, for example, the temporal relationship of self-

punishment to acts of hostility. As an illustration of the importance of such sequences, those children who preceded expression of hostility by self-punishment were found to be very repressed. Levy concluded that his experiments revealed the sibling rivalry dynamics only in terms of their operation at the time of study, and not the genetic or developmental phases of these relationships. The methods of defense against anxiety were especially well shown, even more clearly than in clinical study.

Further exploratory research into the problems of sibling rivalry, using doll play somewhat similar to that of Levy, was conducted later by Conn (26), who also investigated a number of other problems by controlled play. Using toy streetcars and autos as well as dolls, he made a survey of factors associated with car sickness (24); with dolls, toy furniture, and various sets arranged by himself and duplicating the life situations of children, he investigated reactions to parental undersolicitude or oversolicitude (25, 26), fear states (28, 29), and sexual attitudes and sexual awareness in children (26, 27). In the timid child he concluded that, not only is the fear a response to a difficult life situation where the child is overwhelmed and thwarted in attempts to live his own life, but it is a manner of acting that is self-perpetuating because it accentuates the child's problems and leads to an increasing need for self-deception and a diminishing sense of self-esteem. His findings about the reactions of children to genital differences were in some respects comparable to those of Levy (80), who studied the same topic and confirmed the psychoanalytic findings that castration anxiety is aroused in boys and a feeling of envy with destructive impulses toward the penis, in girls.

Concurrently with Conn's experiments, Baruch (9-11), in a short, semi-structured play interview with 46 children at the Whittier College Nursery and Kindergarten, was gaining data on children's attitudes, especially of aggression to their respective families. Her equipment was simple—a box of dolls representing different ages of both sexes, a bed, an armchair, and a toilet, and a piece of India print the size of a handkerchief to mark out a room. Dolls duplicating the family constellation of each child were chosen, and a 15-minute interview held in which the child was told he might do anything he liked with them, or, on another

occasion, that he could be as mean as he cared. In general, this technique brought in more direct expression of feelings, especially of aggression, than any other situation or activity in the pre-school. Two-thirds of the children showed aggression, which was found at all ages from 2 to 5 years. They showed it by separating single members from others, spanking, burying, crushing and twisting the dolls, calling them names, drowning them in the toilet, and putting fecal matter on them.

Several years earlier, Bender, Keiser, and Schilder (13) had studied aggression in 83 cases, from 3 to 15 years of age, under observation at Bellevue Psychiatric Hospital. A majority of these cases were normally intelligent behavior problems, but some of them had borderline intelligence. With each child they used a more varied approach than other investigators, including a questionnaire on aggression; a doll test in which the examiner knocked a doll over and suggested that the subject do likewise; a cowboy-soldier test in which the child was asked to explain the aggressive actions of the two dolls and his attitude to their fighting; an automobile test with a soldier shown between three automobiles, in which the subject was asked, "What is this? What will happen?"; observation of free play; associations to pictures with aggressive content; and comparison with hospital and home records. Aggression was found to be more direct in younger children, more inhibited in older, who are often unable to express aggression at all unless they are in a situation where they may do so unconsciously. In the youngest there was no discrepancy between the behavior and the answers to questions, but in the older, the verbal morality was usually higher than that shown in action. The experimenters concluded that the foundations of aggression are in the organic structure and that variations in aggression may be constitutional. The organic aggression combined with different psychic trauma leads to aggression in relation to a specific situation. Among the trauma that increase aggression are deprivations of food and love.

The findings of Fite (42) in her study of aggressive behavior in nursery school children compare closely with those of Bender, Keiser, and Schilder, although her method was less complex. In addition to case study reports, she introduced two experimental

methods to explore verbal attitudes toward hitting. The first method, in which the children were asked to tell about pictures of children showing aggression in social situations, proved ineffective because of too much moralizing in the responses. The revised method used blocks and dolls. The children made a playground for the two "children" to play in. One doll was named after the subject; the experimenter kept the other. Questions on aggression were initiated by the experimenter asking, "Shall I make (the experimenter's doll) hit (the subject's doll)?" Later this question was reversed. Fite found that the verbal attitudes corresponded closely with parental teachings but not with actual behavior of the children, and that there were marked shifts in the amount of aggression with changes in the experimental situation.

The importance of some aspects of the formal quality of play, first suggested by Erikson (36), whose methods of analysis and interpretation will be described later, was the subject that concerned Renaud in one of the more recent experiments on aggression (100). His method was adapted from the Dramatic Productions Test of Erikson (36, 94). He used a standard table, 30 inches square, with a background the same size as the table. A great variety of toys was available for the child, all equally exposed to view. The toys included three bags of Holgate blocks, four beds, a lamp, a dresser, two tables, an armchair, a stove, an icebox, six plates of food, six chairs, a divan, a kitchen sink, a bathroom basin, a stove, a toilet, a bathtub, a stool, a ladder, six trucks and autos, a locomotive, an airplane, an ambulance, and figures of a little boy, a little girl, two men in business suits, a tramp, a policeman, two women in house dresses, a doctor, a nurse, a lion, a skunk, a dog, and a cat. The lengthy instructions could be summarized as, "Build a story like the director of a movie." Photographs of constructions were made twice in fixed perspective. In all but two cases of the 31 head-injury patients and 16 psychoneurotics the play experiment followed the administration of the Thematic Apperception Test. Renaud was interested especially in the placement on the table of scenes of aggression and restitution for aggression. After measuring on the photographic records the distance of such scenes from the subject he was able to conclude that, "Head injuries tended to separate themselves spatially

from their aggression, to push it away from themselves in their play (interpreted as a possible evidence of guilt over, and atonement for, aggression); as a group they have tended to bring their scenes of restitution close to them." The converse was found true for psychoneurotics. The distant placement of nurturance-punishment (restitution) in the heterogeneous group of psychoneurotics was accounted for, in part, as an apology for proximately placed aggression and as bids for sympathy for the injured figures with whom the subject had identified—in the nature of a demonstration of the way in which the patient himself desires to be treated.

A study that has some bearing on the problem of aggression, but has as its focus the construction and destruction in play, was made by Ackerman (1, 2). He developed duplicate sets of dolls, animals, houses, towers, furniture, and automobiles so built that each item could be assembled and disassembled. He placed the pairs of items in the two sets around a circle on the floor of a large room; one object in each pair was constructed, the other, scattered in parts beside it. The child was brought in and given freedom to build or destroy as he chose. Five types of constructiveness were revealed: spontaneous, stereotyped, ineffectual, constructive-sublimating-aggressive, and constructive eventuating in destruction. The destructive behavior was described by four distinct classes: spontaneous, violent, inhibited, and accidental. Certain compromise formations were also noticed, such as construction followed by destruction, destruction followed by construction, and compulsive-obsessive behavior. Applying this technique to the study of children from preschool to adolescent ages, Ackerman found that as children became older there was a uniform increase in constructiveness and a lesser prominence of destruction, accompanied by a diminution in flexibility and range of performance. With maladjustment, he found an increase in both construction and destruction but a lessening of the range of performance and of flexibility mounting to the point of undue rigidity.

Although these experiments chiefly describe and classify play, they naturally introduce some elements that might well be discussed under the second major type of experiments, the technical.

The goal in the majority of the latter type has been to describe specific play methods that might lead to valuable information about children, or the characteristics of play techniques that produce the most worthwhile results, or the effects of experimental conditions on the play of children, or ways of analyzing play, or the validity of play as a clue to the personality; in other words, the qualities of play as an experimental device. Of course in the evaluation of some of the techniques, experimenters have made applications of them which have led to descriptive findings. These by-products are included with the outlines of the methods that have produced them, although they would belong more logically in the preceding section.

TECHNICAL STUDIES

To the varieties of suggested approaches in the use of play for the analysis of the child, Despert, whose work is mentioned in connection with "drawing," has made important contributions. One of her most novel developments was in the activation of aggressive fantasy through entrusting children with a sharp knife for a specific task (31). The child was placed alone in a special observation room to scrape cardboard, after many suggestions were made to him as to the sharpness of the knife. From one-half to one and a half hours were spent by each child in this activity. The shavings were used for modeling by mixing them with glue and water. Despert found that repeated use of this sharp instrument under the conditions of isolation aroused the latent aggressive trends of the child and brought up to consciousness memories of a hostile nature. These fantasies, which were specific for each child, took the form of a theme that would persevere until he had found an adequate solution to his underlying emotional problem. An advantage of the method was the later creative process which was both an enjoyable experience and an opportunity for self-expression. What was made with the shavings, and the manner in which it was constructed, reflected the nature of the thematic fantasies of the child, including those aggressive impulses motivated in the scraping process. Therapeutic consequences followed free associating to the themes and projects through enabling the child to gain insight into his motivations.

Experimenting also with collective fantasy in group play (31), Despert found this method to be less useful for investigation of individuals or for the development of insight. In the case of boys a theme, "the building of a skyscraper," was suggested. The girls made up their own fantasy around the theme of "Christmas." Imitation and suggestibility, as well as the capacity of the children to make fantasies into concrete realities were revealed by this method, but its chief value was as a motor outlet for the release of impulses.

Despert also described her methods of investigation of personality reactions with preschool children (33). Two chief elements, drawing play with paper and crayons and a form of doll play were used. She observed the children's use of four dolls, a man, a woman, a baby, and a girl or a boy, all dressed in night clothes, which were to be placed in three cardboard rooms. In one of the rooms was a double bed, in the second a crib, and in the third a youth bed. Phonographic recordings, written records, and photographs of the arrangements at the end were combined with case records for the analysis, which involved four aspects: 1. the total content of the individual sessions; 2. the sequence and content of all play sessions, both group and individual; 3. the coincident and successive events in the child's family life; and 4. the speech utterances. The verbal material was further differentiated into: the *affective content*, with special regard to family relations; the *variations in language expression* as related to the various emotional states; the sense of reality, causality, and motivation revealed verbally in the *thought processes*; the curiosity about, and interest in, *the body and the sexual expression*; the dreams and the *concepts of death and birth*, and their evolution from year to year; and, finally, the *formal aspects of language expression* and their development. In a preliminary report of findings in the use of this method with 18 normal children from 2 to 5 years of age, Despert noted that identification of the dolls with the self and the family was the rule. The experimenter was commonly incorporated into the child's dramatizations and assigned a variety of roles in accordance with the frequent changes of roles of the child. The children dramatized the home life in individualized factual and fantasied ways, ex-

pressing associated emotion not always in accord with previous records. Aggressive reactions were the most striking element, anxiety reactions occurred, but positive affective reactions were uncommon. Interest in bodily functions was frequently shown. Some of the children became very excited during the play, and associated with this excitement in 11 out of 15 cases was an increase in the frequency of excretion. Speech deviations, ranging from mere repetition of syllables and transitory stuttering to the use of inarticulate speech in which the consonants *p*, *b*, *d*, *k*, and hard *g* recurred were often associated with the motor behavior.

Lerner, Murphy, and others associated with them have been especially creative in suggesting play devices as projective techniques (74). Horowicz and Murphy, loosening their own imaginations, suggested a great variety of potential procedures, many of which appear not to have been developed further (62). Among those that have been utilized is the Balloon Game, which has been filmed along with other projective techniques by Fisher, Stone, and Bucher (41). In this simple device, a balloon is hung in a fashion somewhat similar to a punching bag and the child's use of the balloon is observed. Because of the limited scope of activity, the child's motor behavior as well as other aspects of his personality may be easily characterized. Murphy has also gathered together a set of Miniature Life Toys, in some respects similar to Lowenfeld's World Test but involving more domestic items. Besides using finger paints, Lerner and Murphy have presented children with jars of cold cream, telling them they might do whatever they wished with them. How they approached the jar, what they did with the contents, and their behavior when they had finished playing with the jar were found to be reflections of basic emotional and motor aspects of the personality. Further methods involved blocking games, such as the Train Game for study of a child's reactions to frustration. In this game a long block serves as a railroad track, at opposite ends of which the experimenter and the child sit. Wooden cubes serve as trains. Both the experimenter and the child "play trains" by moving their blocks along the track. How the child reacts to the meeting of the "trains" reflects his aggression, his submission, or his cooperation. A full description of these and the other methods used

has been published in monograph form (74) and illustrated, as well, in the films previously mentioned, and in the study by Murphy of the personality of "Colin", a boy whose growth was followed from 2 to 7 years (92). Murphy has observed, particularly, the constraint or spontaneity of the child in play, the sequences of which reflect both the contemporary experiences of the child and a distillation of past experiences over shorter or longer periods. (91). Constraint is shown by the refusal to use certain materials, colors, or ideas, by being limited to constrained patterns with blocks, toys, and paints, by indirect handling of conflicts and wishes, by subtle forms of symbolization, and by preoccupation with a certain idea surrounded with anxiety.

The effects of frustration upon the child's play behavior has been experimentally determined by Barker, Dembo, and Lewin (8), whose technique was also used by Wright (125). Four stages were involved in their measurement of the child's play. In the first instance, the child was introduced to a limited number of toys in a portion of a large room walled off from the larger area by a screen through which the child could not see (free-play period). Secondly, the child was permitted to play in the large room with the screen removed. In this instance, most of the toys used in the previous period were incorporated into a much larger group of toys, including an elaborate doll house, a tea table and a toy lake with real water (pre-frustration period). After the child had become thoroughly involved in play, the third stage was initiated. The toys used in the first period were collected and placed in the smaller portion of the room previously used; the child was invited to play at this end, and a wire screen, through which the child could see, was lowered and padlocked. This separated the child from the attractive new toys to which he had previously been introduced (frustration period). After 30 minutes under the frustrating conditions, the wire screen was raised, permitting the child to play with all toys (post-frustration period, not used experimentally, to remove any undesirable after-effects of the frustration).

A "constructiveness" scale by which play with any of the items in the free-play and frustration periods might be rated was devised. This scale correlated with both mental and chronological

age with a product-moment correlation of $.81 \pm .05$, thus making a reduction of constructiveness comparable with regression. The mean constructiveness in free play for the 30 University of Iowa Preschool children who served as subjects was 4.99 points; in frustration, 3.94 points, a reduction of 1.05 constructiveness points. Not all the children regressed, however; 3 did not change in play constructiveness, and 5 increased in constructiveness in the frustrating circumstances. It was demonstrated that the frustrating situation did not have an equal potency in frustration for all children and that there was a dynamic relationship between the strength of frustration and the amount of regression.

Under the direction of Sears, four distinctive experiments into specific methodological problems of doll play have come recently from the Iowa Child Welfare Research Station. The first of these, by Bach (7), had as its first goal the development of a doll-play technique that would permit quantitative study of young children's fantasies. This was accomplished by a lengthy standardized introduction of the child to the play, and four clearly defined types of verbal stimulation of the subject by the experimenter: 1. provision of fantasy support; 2. identification stimulation; 3. anxiety reduction; and 4. facilitation of observation. The "stimulation" was so well defined that out of a total number of observations by two independent observers in a preliminary use of the method 90.8% agreement was achieved. The play of the child was centered in a small (20" x 30") set modeled after the University of Iowa Preschool, and involved four dolls, a teacher, and three pupils, at least one of which represented each sex.

A second goal of this experiment was to establish some normative frames of reference concerning the amount and type of thematic play behavior of young children. For this purpose a recording scheme was devised involving the subject's non-thematic behavior, i.e., experimental and non-experimental tangential responses, and his thematic responses (fantasies), including:

1. The doll "locomotion" and "position";
2. The doll-action: defined as *stereotyped* when appropriate to the environment, i.e. the rooms in the model, and in three degrees according to the amount of action; defined as *stereotyped doll-doll social interaction* when a doll engages in routine social intercourse

with at least one other doll; and defined as *nonstereotyped* when the play includes action not already defined, such as hostility-aggression, affection, directions and commands, sexual curiosity, and escaping and chasing;

3. Thematic digressions from the general "preschool" theme (metamorphoses), when the locale or characters are temporarily changed into something else, e.g. teacher becomes mother.

An observer's manual giving details of this scheme and sample record forms is included in the appendix by Bach (7, p. 56 ff.).

A third goal was to discover whether, and in what ways, systematic variables in the child's environment causally influence projective fantasies, an approach to which was achieved by comparing the fantasies of children who had short rest periods with those who had long periods, a convenient variable in the particular preschool experiences of the subjects. Those with the longer rest periods elaborated the rest theme significantly more often and more aggressively than the others.

The final goal, a measure of the validity of the doll play, was accomplished by comparing fantasy behavior with the results on six rating scales scored by the Preschool teachers. The results, in summary, showed that over 75 per cent of the thematic responses were reproductive of realistic experiences, although varying greatly in quality and type from individual to individual and between the sexes. The girls showed greater productivity, but more initial and prolonged stereotypy and significantly less aggression. Comparisons between the ratings of actual behavior and doll play revealed that:

1. The compliant children had more elaborate fantasies about school; the non-compliant were significantly more tangential and showed a stronger positive transference with the experimenter;
2. The rate of decrease of stereotyped behavior through the four sessions with each child significantly differentiated the well-adjusted from the poorly-adjusted children;
3. Extremely aggressive or passive children showed a great amount of fantasy-aggression, while normally-aggressive children showed less;
4. Children who showed very stereotyped fantasies remained emotionally less involved than children showing a larger proportion of non-stereotyped thematic behavior;
5. Children who showed fantasied aggression against the teacher were in actual behavior less compliant to the teachers;

6. Sexual and toilet themes were elaborated more frequently by children younger in mental age; hiding and chasing, by those who were older;
7. Children highly involved in fantasy play were more affectionate in school;
8. A closer correspondence between fantasy and actual behavior was found in those children who "identified" in play than in those who refused to "identify."

The second experiment in the series was performed by Phillips (96) who varied the kind of materials used from those with low realism to those with high realism and the duration of the play from 20 minutes to 1 hour. She found more exploratory and less organizational behavior with high realism materials, and the opposite with low realism materials. Irrespective of the length of the session, she also found a decrease in the exploratory behavior and in stereotyped thematic play, and a corresponding increase in aggression and tangentiality from the first to the third sessions.

The third experiment dealt with variations in the experimenter-interactions with the child and the organization of the materials. Pintler (97), who conducted this part of the series, adopted two roles with matched groups of subjects. Under the high level of interaction, she tried to establish rapport, sat with the child, smiled, laughed, and reassured, made efforts to keep the child's attention on the experimental situation, provided generalized stimulation toward thematic elaboration and maintained the quantitative limits of not less than 15 and not more than 20 interactions during any 5-minute period. Under the low level, she worked on records, placed only the limits of the experimental room on tangentiality, and gave not more than 5 interactions in any 5-minute period. She concluded that: (a) exploratory and tangential behavior and stereotyped thematic play are not affected by the variables, with two exceptions, that high experimenter-child interaction combined with an organized presentation of materials produced the lowest proportion of stereotyped thematic play, and that the frequency of tangential behavior increased more rapidly as the sessions progressed under conditions of low interaction than of high; (b) unorganized presentation of materials led to greater frequency of organizational play; (c) non-stereo-

typed thematic play and the number of theme changes were greater under conditions of high interaction than of low; (d) categories of non-human and self-thematic play were utilized by few children; (e) thematic aggression was greater in high interaction combined with organized materials; and (f) aggression began earlier as the sessions progressed under high interaction.

Robinson (102) continued the series with an investigation of the function of the doll-family constellation in doll play. She contrasted the effects of using dolls representing the child's own family with those occurring with a standard set. Evidence was reached that identification with the dolls was greater with the representatives of the family than with the standard group, although the kind and amount of aggression shown did not differ significantly.

A summary of the definitive categories used in describing the dominant behavior of the child in play at any moment is given by Pintler, Phillips, and Sears (98), as an introduction to an application of the techniques developed above to the study of sex differences in play. Four results were reported: 1. confirming the conclusion of Bach, girls gave reliably greater amounts of stereotyped thematic play than boys; 2. boys significantly exceeded girls in the amount of non-human thematic play, the number of theme changes and the amount of non-tangential aggression; 3. no reliable differences were found in the amount of exploratory and organizational activity, self-thematic play, non-stereotyped thematic play, tangential play, and tangential behavior or tangential aggression; 4. the intragroup variability in the frequency of the various categories was greater for the boys than for the girls.

The broader application of the findings of the Iowa group will depend upon the variability, if any, observed in comparing their results with those from subjects with different backgrounds. The subjects in the Iowa experiments were a selected group, above average in intelligence and socioeconomic range, all having a number of experiences in common at the University Preschool, and all of preschool age. The major and important usefulness of these experiments is in establishing a pattern for reliable and valid use of doll play as a technical instrument.

The laboratory approach of Sears and his associates stands in

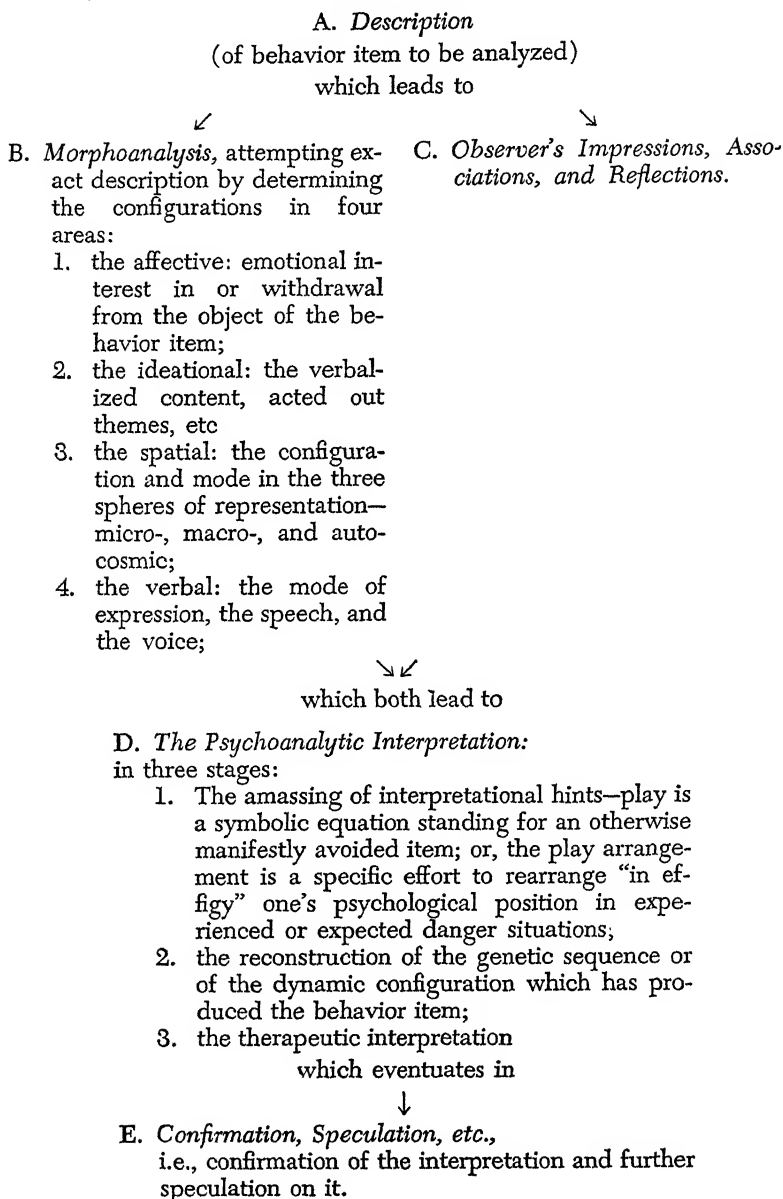
sharp contrast to the clinical approach to the investigation of play. From the technical standpoint, especially in methods of evaluation, the work of Erikson (36-40) is a good illustration of the latter method. Two of the problems which have interested him are: 1. the presence of configurational tendencies in play, such as the spatial relations, the up and down, backward and forward, and open and closed variations, which he found could distinguish aspects of the psychosexual status and maturity of children, and 2. the occurrence of "play disruption"—the sudden and complete, or diffused and slowly spreading, inability to play. Disruption, he claimed, alludes to the danger which would follow if the child were to fulfill a need by play.

Erikson has sifted out three spheres in which behavior occurs—the microcosmic, where a child plays with small objects in a miniature world, "on the floor"; the macrocosmic, where reactions take place with life-size objects transformed by the child into a suitable background for his fantasies; and the autocosmic, amusement in the play world of his own body, his fingers, his toes, his voice, etc.

His analysis of play is basically psychoanalytic and involves five steps, as shown in Figure 8.

Some of the clinically verified conclusions arrived at by Erikson are especially suggestive for play interpretation and for further research. He points out that, on the verbal level, the very first words spoken by a patient on meeting the therapist betray his dominant system of defense, providing a partial answer to the question, "Robbed, or about to be robbed, of the protective aura of the maternal presence, how does the patient act?" More of the answer is shown by what happens in space. In the microsphere the child does what he does not dare to do in reality; thus it is in the metaphoric and symbolic use of toys that all his defenses are first caught off guard. Each of these indirect admissions in the microsphere is an element in a personal transference with the physician. One of the interpretative problems of the therapist is the determination of which play is symbolic or metaphoric and which is only analogous or allusive. Symbolic play is of a higher order, very condensed and abstracted in form, superindividual in meaning, treated with a high degree of af-

FIG. 8. STEPS IN THE ANALYSIS OF PLAY. (Erickson.)



fectual inhibition, and sublimated. To determine its presence depends upon the unanswered question: "How early do these true symbols appear in play?"

On the basis of his experience, Erikson claims that the child seems only able to solve a problem in play insofar as the traumatic event alluded to consisted of an enforced passivity, a violation by a superior force. Insofar as this trauma involves "blood guilt," i.e., guilt arising out of hostility to close members of the child's family, the successful working through of the problem depends on interpretation and reassurance, or control. Unless there is interpretation, regression will take place with a consequent return of symptoms. The point of view that interpretation is necessary would be supported by most therapists (e.g., Gitelson, 50, 51), although there would be divergence of opinion on the amount, and the type, and the time when it should be used. For instance, Lippman (82, 83) would not introduce interpretation until the child reveals that he is ready, in order to prevent the development of resistance. Fries (46) would only interpret what can be related to the child's experience, and states that character changes may take place after one month without any "deep" interpretation.

Two researches originating at the Worcester State Hospital complete the picture of the technical studies. They are grouped together, not only because of their place of origin, but also because of their use of play by adults rather than by children. The first of these experiments was undertaken by Rosenzweig and Shakow (107) because they felt that the similarities in behavior and adjustment between schizophrenics and children might be revealed further by play. They used two tables for the experiment, one for supplies, the other for construction. Their toys consisted of dolls representing different ages and sexes, a toy cat, and a toy dog, furniture and blocks of wood. In order to overcome resistance to playing, the subjects—10 paranoid and 10 hebephrenic schizophrenics and 10 normals—were asked to construct a dramatic, exciting, or important happening in the life of a child. The successive steps in construction, all verbalizations, unusual facial expressions, and other conspicuous behavior were recorded by observation through one-way-vision mirrors. Questioning and

photographing of the construction completed the record. The results indicate that play may serve diagnostic as well as therapeutic purposes with adults, and are summarized in Table XX.

TABLE XX

A COMPARISON OF PARANOID AND HEBEPHRENIC SCHIZOPHRENICS AND
NORMAL SUBJECTS ON SOME ASPECTS OF PLAY

(After Rosenzweig and Shakow, 197)

PLAY ACTIVITY	PATIENTS		NORMALS
	<i>Paranoid</i>	<i>Hebephrenic</i>	
1. Comprehension	all patients combined	$\left\{ \begin{array}{l} 7/20 \text{ satisfactory} \\ 6/20 \text{ partial} \\ 7/20 \text{ unsatisfactory} \end{array} \right.$	all satisfactory
2. Style of work:			
a. planfulness	—	least	most
b. vacillation	most	least	—
c. fussiness	most	—	least
d. exploring, touching, palpating	—	most	least
e. incidental activity	least	most	—
f. use of mirrors	all, except one, ignored them	socially inadequate	socially adequate
3. Form and content:			
a. organization	—	least	most
b. logical sequence (blocks, furniture, then dolls)	—	least	most
c. sparing use of materials	—	least	most
d. articulation into compartments	—	least	most

TABLE XX (Continued)

A COMPARISON OF PARANOID AND HEBEPHRENIC SCHIZOPHRENICS AND
NORMAL SUBJECTS ON SOME ASPECTS OF PLAY
(After Rosenzweig and Shakow, 107)

PLAY ACTIVITY	PATIENTS		NORMALS
	<i>Paranoid</i>	<i>Hebephrenic</i>	
e. rigidity	rigidly literal	exceedingly flexible	in between
f. spontaneous personal reference	most	to some extent	least
g. concern about disposal of construction	shown exclusively by paranoids		

The second experiment, by Bennett (16, 17), was an application of the Rosenzweig and Shakow method to a specific purpose. Bennett was interested in determining how much carry-over obtained between two activities which would express the fantasy of schizophrenic patients. With 120 patients and 34 normals she initiated the writing of a story based on a neutral picture of a man taken from a magazine illustration. Her instructions were:

We are interested in studying people's imagination because very little is known about it. Here, for example, is a picture of a man. Let's suppose that he had a very unhappy life when he was a child. I want you to make up a story which will describe the most unhappy and unpleasant event of this man's childhood and which will tell me what connection this has with what is happening in the picture now.

Allowing the patient to write for 5 minutes, while being observed through the one-way-vision screen, the worker then interrupted the writing and suggested that the patient now construct with toys "the most interesting and exciting scene you can imagine." A control group of patients was asked to construct "the most dramatic experience from your own childhood." At the

time of giving these instructions, the worker surreptitiously substituted a harder pencil for the original pencil and placed the paper where it was available. She then left, to return 10 minutes after the conclusion of the play, unless writing was resumed, in which case 20 minutes more were allowed.

The schizophrenics were found to develop tensions in the writing task comparable to those of normals for neutral tasks. These tensions were discharged by resumption of writing, or by aggressive fantasy in play when resumption did not occur; but, in general, discharge through substitute tasks was relatively weak or infrequent. The two groups of patients showed no significant differences in the percentages of those resuming writing after the play activities. With the normals, however, the play provided an outlet for the tensions built up by the writing task, so that there was a diminution of their resumption of writing after play to that found by other experimenters interrupting them for work on neutral material.

SUMMARY

The use of play in personality research is an outgrowth of dynamic theories of play and of play in psychotherapy. The experiments with play are of two types, the descriptive and the technical. The descriptive experiments analyze play characteristics and their correlates in behavior, as illustrated by studies of sibling rivalry, aggression, constructiveness, and regression through play methods. The technical experiments attempt to investigate various play methods and their suitability as projective devices. Play is primarily of value in the investigation of the child's personality but has been demonstrated to be applicable also to the diagnosis of adults. With children play is, and will probably remain, the most important of all projective techniques.

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CHAPTER XXIII

THE WORLD TEST

AMONG the creative ideas coming out of the Institute of Child Psychology in London is the World Test, developed by Lowenfeld (8) in 1929. The suggestion for the test came from the author, H. G. Wells, in a book entitled *Floor Games*, published in 1911. The primary uses of the test have been as a diagnostic instrument and as a medium of communication in child therapy. Its present state of development owes much to C. Buhler, who visited the Lowenfeld Institute in May 1934, and began the study of normal children with the test. This research resulted in the standardization of procedures, and in the publication with Kelley (3), in 1941, of uniform test materials, a manual, and record forms.

In essence, the equipment consists of a box with miniature wooden toys representing houses, trees, fences, cars, people, animals, and so on. The box for children consists of 150 pieces. The subject is asked to construct whatever he would like on a wooden tray. Lowenfeld (1, 8) used a sand tray, but others (1, 13) have suggested a plain wood foundation. The examiner keeps a careful record of the behavior of the subject, his choices and placements of items, and his final construction. Photographic records of the creations from several angles are recommended by Lowenfeld, since the single photograph may fail to show adequately all the details and the perspective achieved. Sketches of the placements of objects are also used. The record may be enriched by conversation designed to discover what the subject has in mind in his activities.

Bolgar and Fischer (1) have developed the most complete of the scoring schemes for the World Test. They worked with adults using 232 pieces in their equipment, and studied the constructions

of 100 adults, evenly divided according to sex, and from varied urban backgrounds, about 30 per cent of whom were college-educated. The validity of the test was checked against complete biographies and found to be high. They analyzed their records according to six areas:

1. *choice*—first choice and subsequent choices;
2. *quantity*—amount of pieces, variety of pieces and foundation space utilized;
3. *form*—(a) as indicated by the geometric shape, the view, the use of the foundation, the direction of construction, and the symmetry in building; (b) as indicated by the Gestalt achieved, which might be of five types;
 - i. practical (P)—in terms of realistic experiences in life;
 - ii. logical (L)—in terms of the relationships between the various items;
 - iii. social (S)—in terms of people and their activities;
 - iv. vital (V)—in terms of nature and natural drives;
 - v. esthetic (E)—in terms of the artistic effect of the whole;
4. *contents*—items used and rejected;
5. *behavior*;
6. *verbalization*.

A composite picture of the “normal,” as found in not less than 50 per cent of their group, was pictured by Bolgar and Fischer. The first choice would be a house or a bridge, and subsequent choices would follow the lead of the material, resulting in a free creation of a realistic town or village using houses and a church, but not necessarily any other buildings. The contents would include trees, fences, common people, special people (such as a policeman), dogs, farm animals, an auto, a bridge, and at least one detail such as a horse-and-buggy or a soft-drink stand. Somewhere in the construction there would be a road. Altogether, between 35 and 125 pieces would be used, distributed over eight to ten categories and arranged asymmetrically. The “world” would be square and wide open on all sides. The table would form a foundation only. The figures would move freely in different directions. The normal subject would approach the task in an analytic fashion, and carry on his work with enthusiasm and good cooperation, but slowly and with considerable certainty. He would not talk much, but explain what he was doing, occa-

sionally asking questions and inquiring for objects not found.

Michael and Buhler (10), likewise working with adults, classified the "worlds" according to six types, previously established in work with children as being indicative of maladjustments in a person's attitude toward life:

1. *aggressive worlds*—(A-world);
2. *unpopulated worlds*—in which people are omitted, indicating concealed hostility to, or fear of people. (UP-world);
3. *empty worlds*—less than 50 out of 150 items—indicating lack of imagination, lack of interest, or inner emptiness. (E-world);
4. *closed worlds*—surrounded by fences—indicative of fear or hostility, characteristic of children four- to five-years of age, and revealing anxieties. (C-world);
5. *disorganized worlds*—unplanned or poorly-planned worlds—revealing inner confusion. (D-world);
6. *rows or rigid worlds*—unlike reality where things are usually not in rows lined up—indicating deep-seated conflicts and inner inhibitions. (R-world).

In their experience they found the various types to be characteristic of different disorders; as shown in Table XXI.

Lowenfeld (7, 9), Klein (5), Whiles (15), and other child therapists in Britain have used the repeated construction of "worlds" in treatment, determining the progress in therapy by the changes that take place from time to time. Following her usual method of child analysis, Klein makes immediate psychoanalytic interpretations of the "world" to the child, whereas Lowenfeld and Whiles tend to make no direct interpretation of the symbolic play but to talk about the "world" in the child's own symbolic language. For instance, in the full case report of an eight-year-old boy reported by Whiles, the child built a "world" threatened by a flood, and a discussion on the danger of floods followed between him and the therapist.

For the extensive investigation of fantasy in college students carried on by Murray (12) and his associates, Erikson developed an adaptation of the World Test which he entitled The Dramatic Productions Test. The subject was provided with a miniature stage, properties, animals, and little figures with which he was to be the author and producer of a short, one-act play. The test took 30 minutes in all; for 15 minutes the experimenter watched

TABLE XXI
 TYPES OF WORLDS CREATED BY ADULT PATIENTS WITH VARIOUS DISORDERS
 (After Michael and Buhler, 10)

DISORDER	TYPES OF WORLDS					
	A (aggressive)	UP (unpopulated)	E (empty)	C (closed)	D (disorganized)	R (rigid)
1. Mentally defective, adult	present	avoid avoid	most most	avoid avoid		
2. Alcoholic						
3. Mentally defective, child	more than neurotic chil- dren avoid	most typical	present	avoid	more than adult defective present	few avoid
4. Sex problem cases					most most, but populated	
5. Psychoneurotic a. hysterical, adult b. hysterical, child c. obsessive-compul- sive, child		present		present typical		present
6. Psychopathic personal ities						
7. Psychotic and organic	typical				typical	

the subject through a one-way vision screen, and for the remaining 15 minutes the subject put on a performance with the experimenter as audience.

In a small study by Dubin (4), toys of four special types were used in the building of "worlds" as a means of determining attitudes. Six women students of Barnard College, and four men students of Columbia College were asked to construct a dramatic scene, or the world as you see it today, and also, the world as you would like it to be. They were provided with 80 toys representing the four functional groups: 1. war; 2. public service; 3. labor; and 4. travel and entertainment. An interview was held with each subject, when he interpreted the worlds he had made. Three graduate students in psychology were given pictures of the worlds and asked to predict on a 5-point scale the responses of the students on "A Survey of Opinions," modeled after Murphy and Likert's *Public Opinion and the Individual*. Although there was considerable variability between the judges and between each of their predictions in individual cases, the mean coefficient of correlation was $r = +0.49$, which would indicate that the building of "worlds" is likely to have considerable validity as an attitude-measuring device, if such results were to hold up on experimentation with larger groups and with different opinion scales.

As in so many other projective techniques, the World Test shows promise, but it needs validation by extensive research to increase its usefulness as a diagnostic tool. Its chief value will probably remain in its suitability as a means of communication in therapy.

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CHAPTER XXIV

THE PSYCHODRAMA

THE FIRST official psychodramatic session took place on April 1, 1921, at the Komœdian Haus, a theater for the drama, in Vienna. Then, as now, its guiding spirit was J. L. Moreno. Since that time, and since the removal of its headquarters from Vienna to New York, the psychodrama has grown almost to the proportions of a cult, with its own theater in New York, its own private mental hospital, its own press with its own publications as part of the journal *Sociometry*, its own monographs, and its own devotees. In its development art has so predominated over science that many of its writings sound more like tracts than research articles. Yet, if one can overlook some of its extravagant claims, such as, "The experimental psychodrama has shown that controlled experiments in the social sciences can be carried out for the first time, it is believed, in the social sciences with the same precision as in the so-called natural sciences" (49), one can accept the psychodrama rather readily as a projective technique of considerable ingenuity and worth.

The understanding of the psychodrama, or at least of its publications, depends, first of all, upon mastery of some of its theoretical and practical terminology and concepts. The basis of its technique is the doctrine of *spontaneity*, shared by Moreno with Stern and other "personalists." According to Moreno, spontaneity, from the Latin *sponte* meaning "free will," is "the ability of a subject to meet each new situation with adequacy" (31). It "has the inherent tendency to be experienced by a subject as his own state, autonomous and free-free, that is, from any external influence, and free from any internal influence which he cannot control. It has, for the subject, at least, all the markings of a freely produced experience. . . . It is not only the process within the person,

but also the flow of feeling in the direction of the spontaneity state of another person. From the contact between two spontaneity states centering, naturally, in two different persons, there results an interpersonal situation" (37). Psychodrama, or the spontaneity drama, has grown out of a belief in spontaneity as an aspect of man, and out of the conviction that spontaneity is a value to be developed in the personality. Acting according to spontaneity contrasts with acting according to the *cultural conserves*, "the matrix, technological or otherwise, into which a creative idea is placed for preservation and repetition" (47), as characterized by the written drama, whether of Goethe and Shakespeare, or of Lindsay and Crouse, or of Maxwell Anderson. In other words, the roles a person plays in life must become spontaneous, capable of adjustment to the demands of the moment, rather than stereotyped.

The psychodrama is spontaneity training. For its successful accomplishment certain persons and properties are considered desirable. The *theater*, preferable though not essential to the psychodrama, as constructed at Beacon House in New York, is 70 feet long by 25 feet wide, with a height of about 40 feet. At the front is the stage, consisting of three concentric circular platforms, 16 feet, 14 feet, and 12 feet in diameter. Nine feet above the stage, at the front of the hall, is a balcony projecting across the width of the room and accessible from the stage. Underneath the balcony, at either side, are wings about 4 feet long; the one on the left is used for an entrance; the one on the right, for the storage of chairs and tables and other properties that might be needed. The audience sits in semicircular rows facing the stage (73). Other recently constructed theaters are of similar design (e.g., 19).

The central figure in the psychodrama is the *director*. He initiates the psychodramatic sessions and continues to play an active role throughout their course. His functions are illustrated by the positions he assumes in the theater (49). He exhibits two types of patterns, general and formal patterns shown at all times and in all cases, and patterns of conduct used in particular cases. There are three general or formal patterns. The first is the director in the Interview-Position. This is the position used in the

beginning of the psychodrama. The director seats himself in a relaxed manner on the second step of the stage and at its center, from where he is easily visible to the audience and yet symbolically not where most of the action takes place. He selects someone from the group of spectators to interview and upon the interview builds the dramatic session. He aims to establish rapport with the individual and with the audience, to acquaint the group with the procedures, and to elicit data that will be of use in the record. The director returns to the Interview-Position after each scene.

The second formal pattern for the director is the Observer-Position. This is at the right of the stage where he stands with his right foot on the lower step. This places him in such a position that he can observe the action on the stage, but also watch and communicate with the audience. The director acts as a further link between the audience and the stage, for fundamental to the concepts of the psychodrama is the idea of a participating audience.

The third position of the director is called the Spectator-Position. The director may occasionally seat himself with the audience, thereby identifying with it as a whole, and, in particular instances, with some individual member of the audience. The Spectator-Position, with the main purpose of releasing the audience or the individual spectator, also gives the director an advantage in observing audience reactions.

In particular cases the director may select the points at which action is to begin, may send in or call out certain participants, may stop the action to discuss with the actors or the audience certain phases of the drama as it unfolds, and may terminate the action when its purposes have been fulfilled. An important contribution of the director is his assistance in *warming-up* the actors and the audience. The warming-up process consists, usually, in prompting bodily starters, i.e., physiological signs of emotion, such as laughing, scowling, aggressive movements, or withdrawing movements. As these motor symbols of emotion unfold, they release simple emotions such as happiness, anger, and fear, or more complex emotional states (31).

Sarbin (58) has delineated the concept of *role-taking*. He points

out that the role an individual may assume depends on his prior experience, either overt or symbolic, vicarious or genuine. The role taken is complex and organismic, embracing all aspects of the personality of the individual and different levels of consciousness from complete awareness of action to unconscious participation. Role-taking varies in the number of different roles in an individual's repertory and also in the intensity or completeness with which the roles are enacted. There are intra-individual, inter-individual and group (from one culture to another) differences in the success with which roles are assumed.

F. B. Moreno and J. L. Moreno (52, 54) have developed a classification of roles according to eight characteristics:

1. *Origin*—collective roles or individual roles;
2. *Degree of Freedom or Spontaneity*—measured by role-taking, role-playing, or role-creating;
3. *Content*—psychosomatic (or physiological) roles, psychodramatic roles, or social roles;
4. *Quantity*—deficiency of roles, adequacy of roles, or superiority of roles;
5. *Time*—slow, average, fast, or overheated;
6. *Consistency*—weak, balanced, or strong;
7. *Rank*—dominant, or recessive;
8. *Form*—flexible or rigid

The types of roles an individual may assume with spontaneity relates itself to the development of the self, or the ego, of the individual. These roles may be *focal*, that is, roles which are of great interest to the subject, developing naturally out of his own integration of his real-life situations, or *extra-focal*, of diminished interest and distinguished by a decrease in spontaneity, a slackness in the flow of energy, a tendency toward role-lag (a carrying-over from one role to another) (1). The roles taken may depend on the *tele* of the psychodramatic situation, which is the "feeling process projected into space and time in which one, two or more persons may participate" (47).

The action is always recorded by at least one *recorder*, preferably two. Both recorders note the time; one of them keeps a running account of the verbal material; the other, of the action.

Del Torto and Cornyetz (7) have given the most complete

description of the use of psychodrama as a projective diagnostic test. They point out the superiority of the psychodrama to other projective methods in the manner in which it samples actual behavior of the individual as he comes up against real-life obstacles and as he performs in a social setting under interpersonal stimulation. Further, the psychodrama does not require a complicated theoretical system to refer its findings back to the whole behavioral complex of the individual, and difficulties in validation are removed. Moreno and Moreno (29) point out, also, how the psychodrama test not only reveals the personality formation, but manifests the "cultural" level of the individual.

The test consists in placing the individual on a stage after a brief interview with the director and observing and evaluating his performance in a number of artificially created enterprises. The nine test situations are:

1. *The perfect ego: imaginary person situation.* The person is instructed that he is on the stage with an imaginary person, that he is to invent and create a relationship with this individual, to identify the person, the time, the place and the activity. No limitations are placed upon the individual except that he must imagine one person only. What is done is up to him. This is designed to get his personalized and unimpeded projection of what a social relationship means to him, and to reveal how he communicates with another.
2. *The object and the auxiliary ego situation.* The patient is placed on the stage with an imaginary object, suggested by the director, and another person (auxiliary ego). His task is to establish a relationship with the person and the imagined object. The goal in this test is to define the influence of an actual social relationship upon how the subject deals with objects, for instance, whether he monopolizes, shares, or surrenders them, and to study the differentials between acting with an imaginary person and a real person.
3. *The perfect ego: three object situation.* The subject is on the stage alone. The director names three objects and tells the subject that he may choose one, two, or three of them. He must invent a situation in which he relates himself to the object(s) of his choice. He may not introduce any other objects and must deal with at least one of the suggested objects. Evaluation is made of the objects chosen, emphasized, or rejected; of the amount of necessity to integrate the objects; and of the interest in the objects, which may be used functionally or aesthetically.

4. *The periodic stimulation situation.* A situation is created for an individual (e.g. an artist's studio), his role is defined (e.g. the artist), a companion is sent in to perform in a certain relationship to the person (e.g. model) and from time to time the director sends in other auxiliary egos, each instructed as to the roles they must play (e.g. aggressive lover, landlord). Each auxiliary ego in turn replaces the previous one, but the basic situation remains unchanged. The design in this experiment is to test the subject's range of expansiveness and his capacity to make spontaneous adaptations to surprise elements.
5. *The hidden theme situation.* The subject is sent out of the room, an action is begun by auxiliary-egos, and the subject is required to enter and to take part in the situation. This shows the subject's ability to perceive a theme and situation in progress and to create a role in relationship to it.
6. *The mute situation.* A theme is given to a subject who is required to act out the situation without words, using gesture and bodily movement only. This action has as its aim the revealing of the physical resources of the individual for communication and verbal methods. It reveals, also, the area and emphasis factors of his movement as an index to his personality.
7. *The reversal of role situation.* The subject is placed on the stage with another person in a defined situation. The action unfolds for a controlled period, and then the roles are reversed with instructions to reply to the situation as exactly as possible. This gives a measure of the subject's social sensitivity, of his awareness of the content and manner of expression of his own role and that of the auxiliary ego.
8. *The triple situation.* Here, the subject is requested to go immediately from one to another of three consecutive situations. As the action proceeds it is interrupted for instruction, then proceeds again until interruption for delineation of the third situation and finally until all three scenes have been played. This manifests the subject's spontaneous adaptation to these shifts and the amount of role-lag from one to another.
9. *The descriptive situation.* With the intent of securing a perceptive protocol, the subject is told he is alone in a locale chosen by him, either one familiar to him in real life or a product of fantasy. He is instructed to describe it fully, as if experiencing it and living in it at the moment.

Within the above situations, a wide range of themes may be introduced by the director, including love, death, economic problems, status, security, and self-realization. The roles may be work roles, private ego roles, public ego roles, creative roles, social

roles, and family roles. The variety of themes and roles permits the director to test-the-limits of the subject's behavior.

Analysis of the responses to the above situations may be made within four categories: the imaginal content, the methods of perception manifest, the field-involvement and organization, and the social interaction of the individual.

Moreno and Moreno (29), using different methods, suggest how the psychodrama may be used as a test with children to show not only the level of personality development but also the "cultural age." Their technique consists in asking a representative jury to determine characteristic roles in the community in which the children live and then to select the 15 roles most pertinent for the children to act in and understand. The child is asked to enact one after another of the 15 selected roles to "show us what *he* does"; if there is hesitation, to show "what else *he* does"; if unable to warm up, to "tell us what *he* does"; and, if a correct description, to enact it. Later the roles are enacted in a standardized form by an adult to measure the recognition by the child. Scores are provided each child on the numbers of role enactments; of role perceptions; of enactments below the level of recognition, where elements remotely related to the role but not sufficient for its recognition are presented; of partial enactments, which include one or two recognizable phases of the role; and of adequate enactments in which all significant aspects of the role as evaluated by the jury are included. Experiments using this technique in a small town and in an underprivileged section of New York City revealed that there were many roles with which children were intimately acquainted but which they were unable to act out.

The use of psychodrama as a diagnostic instrument cannot be separated from its therapeutic role. While it may seem beyond the scope of this chapter to discuss therapy, because of the intimate relationship between understanding the individual and relieving him of his difficulties within this technique, the full status of psychodrama may not be recognized without a discussion of its applications in treatment. The psychodrama may be designed for either individual or group therapy because of its social setting. In either sphere it fulfills two functions, providing a catharsis and developing spontaneity. As Wilder (74) has

pointed out, "On the stage the patient is confronted with . . . a new kind of environment, half of the inner and half of the outer world; half created by the self, half governed by the harsh laws of everyday life; half abstract or symbolic, half concrete and definite; half flexible and interchangeable, half rigid and unchangeable." Herein "the patient gains new points of view on himself and his problems; he reveals hidden sides of himself to the physician; and he practices adjustment."

Moreno claims success in the treatment not only of neurotic and behavior difficulties, but also of schizophrenia or disorders of a narcissistic character (35, 45). He discriminates seven techniques of applicability to the treatment of the psychoses:

1. *The substitute role technique*—asking a person to act out someone else, somewhat remote from himself, but related (as, father, brother, cousin);
 2. *The mirror technique*—in which the auxiliary ego takes the part of the patient, who also plays on the stage as himself, and in which the auxiliary ego mirrors the patient's behavior to him;
 3. Acting out of a *patient-suggested plot by auxiliary egos*;
 4. *Reversal technique*—someone else plays the patient and the patient plays someone in relationship to the real self (e.g. auxiliary ego plays patient, patient plays psychiatrist);
 5. *Symbolic distance technique*—starting with roles far-distant from the patient and then reducing the distance;
 6. *Double-ego technique*—in which the patient and an auxiliary ego objectify different sides of an inner conflict.
- The above techniques are used on the stage.
7. *Auxiliary world technique*—in which the institution becomes the stage, and everyone in contact with the patient takes on a role desired by the patient.

The border line between individual treatment and group treatment cannot always be clearly defined. In psychodrama which starts with a group as the focus of attention, some methods of individual psychodrama are modified and some new methods are introduced. There are various techniques for group use. Barbato (3) describes a method of recorded psychodramatic sessions serving as stimuli for group discussions which are in turn recorded and form the background for psychiatric interviews; he mentions, also, catharsis through psychodrama, repetition of the thematic action until desensitization has been achieved, the

acting out of anxiety-laden anticipated situations, and the development of insight into others through use of the "opposites" method (the *reversal* technique). Fantel (8, 9) gives illustrations of 10 service cases treated through psychodramatic groups. Moreno and Toeman (55) discuss two types of group psychodrama: a confessional type and a non-confessional type. In the former, catharsis is achieved by individuals of the group acting out their own problems on the stage, on the theory that there will be some commonness to the problems among the group, or by group discussion of the proceedings on the stage as they relate to the group's own problems. In the latter type there are three preparatory steps: 1. the interviewing of every subject; 2. careful analysis of the materials; and 3. the classification of the individuals according to the dominant mental syndrome or problem. When the psychodramatic sessions are organized with fairly homogeneous groups, Cornyetz (5) suggests the value of beginning group therapy with a mutual interview rather than an introductory talk since that goes further in familiarizing the patients with the impromptu process.

Moreno's immediate goal in beginning treatment is not to force upon the patient the acceptance of new roles. He starts with providing a new and imaginary world as an anchor for the patient's experiences. He supports the delusions and hallucinations of the patient and provides an "imaginary reality" in which they can be objectified. Since he rejects the Freudian idea of the repetition-compulsion theory of disorders, he believes that reliving of the experiences on the stage does not accentuate the psychotic behavior but, rather, provides bounds for it, within which the patient can begin to build new roles on the support of the old, until the new roles can stand alone as "more highly organized patterns of conduct." (36)

Apart from work with psychotics, Moreno has reported treatment of many personal difficulties, including marriage problems (34) and intercultural relations (39). Others report its usefulness with delinquents (4), problems of military adjustment (8, 9, 68, 69), disorders of children (13, 21, 60, 61, 62, 66), about-to-be-discharged service patients (18), stutterers (20) and persons with other speech defects (27, 65), personal problems (26),

feeble-minded (59), and social case work (72). Tierney (67) has proposed the application of psychodrama to the cure of alcoholics.

Moreno and Toeman (55) report that the group psychodrama appears of special value in minor maladjustments, incipient neuroses, and simple interpersonal conflicts. In the more serious difficulties, it is only a prelude to assist in orientation to procedures, preliminary to a more personalized psychodrama. Further usefulness of the group method might be as a spontaneity test (3, 41) in order to classify patients, according to Moreno's typology, as spontaneous or conserving types. In one of his earliest English publications Moreno developed an extensive scheme of classification of inmates in criminal and other institutions on the basis of these patterns of behavior.

A further use of the psychodrama appears in the training of various workers and in other educational procedures. French (12) used it to train foremen at the Harwood Manufacturing Corporation; Solby (64), in the training of personnel workers; Haas (14), as a guidance technique; Hagan (15), to teach students who must learn quickly how to deal with the exaggerated, heightened interpersonal relations with patients in a neuropsychiatric hospital. Lippitt (28) used it in training for leaders and research workers. Hendry, Lippitt, and Zander (16, 75) applied it to a sociology course on "The Family" as a demonstration and research technique. Kay and Schick (23, 24) trained interviewers for the Commission on Community Interrelations by means of the psychodrama. Moreno (47) tried its use in an experimental theater and a spontaneous newspaper, and suggested its value to television (with Fischel, 50) and to therapeutic motion pictures (44).

Discussion of the psychodrama would not be complete without mention of its sister method, the sociodrama (5, 10, 38, 39, 40, 70), which deals with intergroup relations and with collective ideologies rather than with interpersonal relations and private ideologies.

In spite of the enthusiastic endorsement of many who have worked with the psychodramatic method, particularly as a therapy, certain obvious difficulties stand in the way of its use as a projective diagnostic device. One of the major difficulties is

objectification of measurement by its means. Even more than standardization of its method, psychodrama requires standardization of the observing technique and of the interpretative schemes. As superficial a typology as suggested by Moreno cannot serve as an adequate basis for the description of the whole personality.

A second difficulty is that, while the psychodrama does permit expression of behavior, it must achieve a measure of its validity as a tool for revealing the organismic totality of the personality. In spite of the claims that psychodrama circumvents the necessity of validation, such studies are essential. Serious research into the relation of the behavior on the psychodramatic stage and the more realistic life behavior of the individual must be undertaken. The assumption that the spontaneity theater creates "spontaneity" is open to question: may it not, just as readily, create artificiality? The assurances of tests for spontaneity are not sufficient guarantee that such a state has been achieved, even though the assumption of validity seems justifiable by common sense.

Another major criticism of the technique is the personnel, properties, and time required. Limitations in personnel may be overcome by using non-professionals in large institutions where such individuals might be available. In the small clinic, professional office, or guidance office, the provision of auxiliary egos might prove most difficult. It is a question, also, whether standardization of the technique can be achieved with flexibility in the types of supporting properties and the optional use of a theater. Time is less of a factor if diagnosis is to be complemented by treatment with the psychodrama. If, however, the diagnostic use of the method must stand alone, then the time involved in securing representative samples of behavior under a variety of conditions must be regarded as lengthy, if not, indeed, for practical purposes, prohibitive.

The inherent difficulties in the use of psychodrama should not be allowed to act as a deterrent upon its development, however, for the idea which is at the present *in statu nascendi* in the technique shows promise of increasing usefulness.

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PART V

THE FIELD OF PROJECTIVE TECHNIQUES

CHAPTER XXV

AN OVERVIEW

IN SURVEYING the whole field of projective techniques certain general questions emerge. The first of these is a practical issue: how adequate are projective techniques for the job they set out to do? The answer to this question cannot be definitive. Projective techniques start out to accomplish a number of purposes subsumed under the general heading of personality diagnosis. They have been found to range on a scale of usefulness. Some are so important (e.g., the Rorschach, the TAT, and Play) that they have dimmed the brilliance of other potentially rewarding methods; others are so esoteric (cf., Goitein and Kutash, p. 259), so invalid (Multiple Choice Rorschach, p. 150), or so unproductive (Tautophone, p. 54) that they seem not to merit further use unless modified.

The range of usefulness is the product, however, of sets of circumstances, some of which are modifiable, some of which are not. To a certain extent the value varies proportionately with the quantity and quality of experimental investigations with the specific technique. Certainly the Rorschach, which has had the most lengthy and some of the most careful evaluation among projectives, stands out above practically all others in serviceableness. This cannot be solely the result of the extent of research but is probably a function of it. Other tests that might have been developed to provide comparable, or even more, information (such as the Cloud Pictures) have not had a similar opportunity to demonstrate their advantages.

A second contributing factor to the usefulness is an elusive quality, the extent to which the results obtainable are specific to the technique itself. Obviously, the Rorschach has a stimulus value to command a greater range of behavior than a test of

limited value such as the Tautophone test. It is apparent that the distinctions in value between these two tests are brought about by characteristics inherent in the techniques and not just by the quantity of research. Without experimental study it is possible only to conjecture as to the amount to which two more closely similar methods than the Rorschach and the Tautophone may yield similar findings. When one of similar methods has been subjected to a quantity of research extending over many years, there is a natural reluctance to initiate like research with another method which might give not as much or parallel findings to those which may already be secured. Thus the useful test is self-perpetuating and with continued application builds up data to expand its benefits. The possibility always remains, however, that, given equal emphasis and opportunity to prove itself, a new method might be even more instructive about the personality. The criteria by which we may evaluate a projective technique depend considerably upon research with the technique, so that they help us in only a limited way to make preliminary appraisal of a new or little-used method.

The adequacy of the technique is also a property of the skill of the experimenter. Even with the Rorschach method where such detailed instructions for administration, scoring, and interpretation are available, the information that may be obtained will vary with the examiner's training, insight, intelligence, practice, and carefulness. Even those who are expert with the method will not secure identical personality pictures, although the major outlines will tend to be strikingly the same. To suggest experimentation with a little-used but perhaps workable method as a means of establishing its value is naturally no guarantee that subsequent research will actually provide an accurate judgment. Controls over the experimenter's skill are not generally used. Research studies do not begin with affidavits of the experimenter's personal qualifications for such research. Such qualifications strongly exert their influence upon the research and indirectly upon the following course of development of techniques. Negative results secured by a semi-skilled examiner may prevent reception of a technique that in the hands of a highly skilled experimenter might have yielded more positive results.

A deeper question, related to the skill of the examiner, is the subtle bearing upon experimentation with projective devices of the psychologist's own attitudes toward and motivations in using specific techniques and in rejecting others. To a certain extent the personalities of those who have invented various methods must have affected the climate in which they have grown or withered. The personal influence of those who have taken up the proposals must have contributed to their flourishing or neglect. Many of the techniques themselves must have met personality needs in those who have adopted them, or, at least, must not have stirred up strong resistances. On the other hand, in some cases, the inability to experiment with or to accept some methods must be tied in with unconscious emotional reactions as well as with conscious attitudes and overt practical considerations. For example, about the Cloud Pictures the question might be raised whether or not the indefiniteness of the forms in which Stern found virtue or the hazy chiaroscuro effects may not have inhibited experimentation by affecting unfavorably the attitudes of some psychologists who have handled them but have not undertaken experiments with them. That such occurrences must have taken place may be hypothesized but may not be confirmed as yet since there has been no direct research into this possibility. To trace the historical development of some of the techniques with this orientation might give us partial insight into the underlying psychology of the experimenter with projective techniques. It would be more profitable and easier to conduct experiments that would illuminate this issue. Here is an area of study that would provide someone with a lifetime research. Possibly, projective methods themselves might be used for this research and might contribute not only to the science of psychology but to the psychology of science. It would be of decided value to make conscious some of the motives involved in research with and use of projectives. By analogy we may be able to deduce examiners' reactions to actual or possible techniques thus enabling us to secure more objectivity in our evaluation of their adequacy.

The answer to the question about the adequacy of projective devices is then only a partial one. Some of the techniques have proven practical in the laboratory and the clinic; some might

prove as valuable as those in use, if not more so; others may be shown by further experiments to be of little value; and finally, some have already been rejected as unworthy of further development.

CRITERIA FOR THE ADEQUACY OF A PROJECTIVE TECHNIQUE

The second general question about projective methods deals with the criteria by which they may be measured. Projectives should serve two main functions: 1. the offering of rapid, valid, and reliable means by which a clinician may arrive at a picture of the personality of a subject; and 2. the facilitating of personality studies in psychological research. The criteria by which to evaluate the techniques will differ with the situation in which they are to be applied. As an illustration, the analysis of personality through a combination of projective devices and the electroencephalogram would be of restricted usefulness to the clinician but might prove highly valuable to the research worker. With these functions in mind, the criteria may then be suggested.

1. The first is that the technique must stimulate behavior by the subject in which the different layers of the personality may be manifested and, as much as possible, distinguishable. While many theorists have emphasized that in projective techniques the individual has *free* self-expression, such a conclusion is an oversimplified description of what takes place. By no means are all the responses in projective tests free. They include free behavior in the sense of its being beyond conscious control. They objectify this unconscious behavior so that it may be observed, but they also elicit conated behavior. The best techniques stimulate behavior that may not ordinarily be discovered or that may otherwise be revealed only in lengthy observation periods. The responses are neither more nor less products of the total personality than responses in other types of tests. Projective tests should, however, reveal a wider range of individual behavior than may be secured in other test situations.

2. The second criterion, of especial importance in the clinical situation and of lesser significance in the laboratory, is that the stimulus materials used must be simple and readily available.
3. Thirdly, the method must not consume more time than is pro-

portionate to the value of the information received. No arbitrary time limit can be established for the optimum duration of a projective test. To take several hours to secure data that cannot be gained in any briefer time is justifiable. To take 15 minutes to use one technique when another would give the same content in 10 minutes is unrewarding.

4. The technique should be easy to administer. This, again, is a more critical factor in clinical applications than in laboratory research. If it is possible for an unskilled worker to administer the test, even though interpretation is done by a skilled worker, so much the better. Demands for the services of trained psychologists so far exceed the supply that techniques which permit the delegation of responsibility to others collect merit. Ease of administration implies ease of observation and recording of responses.

5. The method must be reliable in the sense of being able to produce records from an individual which are psychologically consistent. They must reveal reliably the changes in the dynamic personality. Scoring and interpretations of the protocols must also show satisfactory reliability.

6. The interpretations based on the records must be valid. The relationship between the interpretations and the actual behavior of the individual must be demonstrable.

7. The techniques should not produce major disturbances in personality functioning or act as precipitating factors to maladjustment. In the clinical situation it is not always possible to meet this criterion [cf., p. 188, Richards (597)].

CRITICISMS OF PROJECTIVE TECHNIQUES

Projective techniques have been the target of many critics. Unfortunately many of the attacks upon projectives have been justifiable and, what is more serious, unheeded in later research. In fairness to the advocates of projective methods it must be pointed out that some of them have been the most vigorous in finding weaknesses within the methods. It must also be noted that some of the criticisms are the outcome of a general lack of development of psychological science rather than of the specific field of projective techniques. Many crudities could be removed from current practices but others will remain until scientific

method in psychology makes the necessary advances and theoretical psychology is able to throw light on many fundamental problems.

The criticisms directed against projectives include the following:

1. A primary criticism has been the lack of standardization in individual projective methods. This is to be expected in the developmental stages of the techniques. With the exception of the Rorschach, no projective devices have been used in a standard fashion in more than 50 research studies. The TAT is approaching such standardization. In many cases the departures from recognized procedures have been so minor that they have not prevented inter-research comparisons of results. In other cases, however, the modifications have been such major ones that, in effect, a new technique has been developed. Standardization is a rule that can only be partially applied to projective techniques in any case in view of the facts that have prompted the next criticism.
2. A second criticism is the sensitivity of the methods to the interpersonal relationships between the examiner and the subject. This may be a handicap unless account is taken of the quality of the social situation as a part of the stimulus in the technique. Precision in definition of the stimulus in this larger sense, while contributing to the complexity of the technique, may reveal further the dynamic interrelationships between cause and effect in the subject's behavior. Calibration of the examiner then should become an essential part of the procedure, but facilities for accomplishing such calibration are to a great extent undeveloped.
3. A third criticism is the failure to describe in detail the characteristics of the groups used for experimental studies. This is another feature that has stood in the way of comparisons between the various reports of findings in the use of projectives. It is a result partially of reporting and partially of the problems that lead to the next criticism.
4. The fourth criticism is the semantic difficulty involved in presenting the results of test interpretations. This is a product of inadequacies in terms used to describe personality characteristics. The psychological vocabulary inherited from the earlier days of

the science is unsuitable for descriptions of the whole personality. Yet the words in use are clung to with tenacity for want of better ones. Sporadic attempts have been made to substitute terms which are equated with scored aspects of some of the techniques (e.g., "Erlebnistyp" in the Rorschach; "need," "press," and "thema" in the TAT; "extra-, intra-, and im-punitive" in the Picture Frustration Study). The weakness of these special vocabularies is that the use of the words is based on assumptions that the descriptions they imply are validly and reliably related to personality characteristics. The assumptions are often reified when they are only descriptions growing out of hypotheses.

5. Some have found the bulk of material secured in projective devices a handicap to their use. The problems involved are those of reducing the quantity of records by a usable scoring scheme, which does not destroy the nature of the material but reflects it, and of interpreting the quantity of material once it is scored. These steps may be so time-consuming as to be impractical.

6. As to administration, scoring, and interpretation, a difficulty is encountered in controlling the bias of the examiner. This subjective element may show itself in the observation of the individual's behavior, in choosing appropriate categories when classifying responses, and especially in interpretation. In all these phases the examiner may project his own personality as easily as the subject has projected his.

7. The preceding criticism raises the problem of reliability in the test, in scoring, and in interpretation. Critics have pointed out how frequently assumptions concerning reliability have been made and then treated as though they were scientific evidences of reliability.

8. Questions of reliability introduce those of validity. To measure reliability and validity in projective techniques can be accomplished in part with some of our present statistical methods. There is little excuse for failing to achieve whatever systematic and scientific study of reliability and validity is possible with the tools now at our command. It is to be recognized that the problems involved in these measurements are more complex than those encountered with most tests. Refinements in statistical method will be necessary before more than the approximations

now possible may be secured. The critics of projectives can serve a useful function in keeping to the forefront the urgency of achieving measurements and of developing the techniques with which to accomplish them.

9. The ninth criticism is that the results of projective techniques have been freely related to personality theories which are themselves lacking in validity, but which are treated as being valid. Illustrating this is the frequent use of interrelationships of test findings with theories of psychological types (e.g., the theories of Klages, Rorschach, Jaensch, Jung, Spranger, Kretschmer, and Sheldon). Such comparisons may perform a disservice to projective techniques as well as to the science of psychology as a whole. The use of type theories as valid is not the only illustration of this common error in the use of projectives. Complaint would not be registered if adequate awareness of the hypothetical nature of the personality theories were demonstrated. To base experimentation upon assumptions is a respectable scientific method; to treat assumptions as observable facts brings the conclusions based on these assumptions into disrepute.

10. A further criticism is the outcropping of a cultism associated with rigidity of thought patterns among the exponents of some projective techniques. The basis for this criticism is not that people have bound themselves together by a common interest in certain techniques but that they have walled themselves off from psychological science. They have built up prejudices against the findings and theories of psychology which could contribute constructive evaluation to the development of the technique. Fortunately this trend is countered in others by what Stern has called the "polysymptomatic approach" to the personality, the measurement of many traits at the same time, by collateral studies using a variety of techniques.

11. A final criticism is that novices and untrained or poorly trained workers have discredited the field of psychology by misuse of projective techniques. This problem has been more frequently called to mind by those who use the methods than by outsiders. Training standards are difficult to apply in such a new field as this when many of the methods themselves are still in the formative stages. It appears likely that the future will bring more con-

trol over the use of projective methods as standardization and clarification of training procedures are approached.

It must not be imagined that all these criticisms apply to each of the projective devices or to each experimenter using them. They are appropriate in a sufficiently large number of cases, however, to demonstrate the need for further research into projective techniques and to allow some general conclusions as to the types of experimentation required.

RESEARCH NEEDS

There are at least seven major areas of research with projectives which require the attention of scientists. The first two are the more fundamental and the more challenging; the last five, the more practical.

1. The first of these is the study of the "projection" process itself. It is important that examination be made of the ways in which behavior in the test situation is structured by: (a) the fact of taking a test and the meaning of that fact to the subject; (b) the test instructions and the objective stimuli provided by the examiner; and (c) the personality of the examiner. The first and third of these influences have been less frequently examined than the second. With any test the characteristics of the stimuli and instructions are important. With projectives, however, the other influences of the test situation are also important, and must be evaluated in such a fashion that conclusions as to the relative force of these varying factors may be isolated.

A further research need in the area of the projective processes is in the dynamics of perception and the organization of behavior in response to the perceptions and the expression of that behavior. As yet the greater part of the research with projectives has been concerned with the end-product, the responses achieved by individuals. To a lesser extent interest has been shown in the perceptual processes involved in the techniques. Only recently have attempts been made to describe the connecting links between perception and the responses. It must be acknowledged that the "projection" is only a phase in the complex pattern which apparently begins with the presentation of the stimulus and ends with the response. Some of the questions in this area that await study

are: To what extent are the organizational and expressive processes the same for a child, an adolescent and an adult; for the superior and for the feebleminded; for the New Yorker and the Balinese; for the schizophrenic and the manic; for the person who is sophisticated in the taking of tests and for the naïve? What is the bearing of the perceptual behavior on the later stages in response development? What is the function of the test situation in facilitating or hindering the accomplishment of these phases? Finally, what is the effect upon the individual of these activities—are the projective processes cathartic or frustrating? Do they relieve tension or create it? What individual differences may be observed in these effects. Of course, it is easier to pose such questions than to answer them.

2. Closely related to study of the above problems is continuing research into the nature of the personality for the validation of present theories and for the advancing and validation of new theories. Such studies show the same relationship to the practical studies of projective techniques as research in nuclear physics shows to the development of practical engineering methods for utilizing atomic power. The former may not always precede the latter but it must receive its due proportion of research effort or else practical problems will emerge which cannot be solved until the necessary fundamental knowledge is available.

3. Turning our attention to the research needs in practical aspects of the techniques we find that the first of these has an intimate relationship to the preceding problems. It is the need for study of the psychological language involved in personality descriptions. This is essentially a borderline problem between basic and practical research. The constructs of basic research must be expressed in words. Sometimes our vocabulary is sufficiently accurate to allow its use; at other times new words need to be developed; but most of the time old words are used even though they are outworn. This unfortunate tendency is especially obvious in the efforts to describe behavior of the total personality with words which took on their psychological meaning when personality was regarded as an accumulation of discrete traits. Even some of our most common psychological terms (e.g., emotion, mind, etc.) are unsuitable for present-day personality descriptions because they

retain meanings that are no longer valuable even though the words have been defined in new ways in an attempt to keep pace with current theory. (Witness the confusion in the efforts to explain "emotional insight.") New words would be preferable even though their acceptance might be slow. The study of psychological language is a neglected research area with important implications for projective techniques. We need to discover appropriate verbal symbols for the hypotheses and laws that are being established and will follow; we need to define more accurately the symbols already standing for tenable psychological abstractions; we need to explore and delimit the meaning of terms already in use in projective techniques; we need to be prepared to describe with suitable language the observations that will be made with these techniques. Such study is essential for the accomplishing of the next type of research, which must depend greatly upon our language.

4. The fourth need in research is validity and reliability studies on both scored elements and the total records and interpretations of the individual projective techniques. Each projective method described here needs further experimentation of this type. Some would demand that validity and reliability be evaluated by a rigid adherence to the present scientific and statistical methods to bring projective techniques into line with other types of tests. Such a standard usually reveals a lack of understanding of the essential nature of projective techniques. Present statistical methods are adequate for the comparison of individual traits in records and in personality; matching methods have been of assistance in comparing the whole records with the whole of personality pictures; but new methods need to be applied that will relate the multiplicity of items in individual records with those in case studies within their whole frameworks. Studies that isolate traits from their context in the Gestalt of the whole record distort the significance of those items; those that only compare wholes, as by matching, are deficient in failing to measure the significance of detailed individual items to the total picture. New statistical devices are urgently needed for solving these complex and pressing problems in measuring reliability and validity.

5. Because no individual method has been demonstrated to be

the perfect projective method it is essential that the research trend of collateral studies with a variety of projective methods be continued and enlarged in scope. For the improvement of individual techniques the effects of modifications of already proposed methods must be evaluated in a detailed fashion by comparing the results obtained by using both the test and the test as modified. Such research is necessary for the building up of standard procedures in projective testing. For the benefit of clinical diagnosis as a whole, the values of individual methods used in conjunction with a variety of other methods must be further isolated. Finally, longitudinal studies from which the modifications in personality over long periods of time may be abstracted must be increased far beyond their present state of development.

6. A further area of research, which has been initiated but which is only in the beginning stages, is into the relationship between projective testing and treatment methods. Already mentioned is the importance of studying the psychological effect of being subjected to projective testing. Examination of the effects of interpreting test results to the subject has been reported by therapists but not under controlled conditions. Scientific experimentation with techniques of presenting test findings and into the consequent effects upon behavior are waiting to be undertaken.

7. A final suggested research area deals with the training problems involved in instruction in the use of projectives. The improvement in projective techniques will depend in part upon the quality of studies that evaluate the techniques and partly upon the quality of training and selection of research workers and clinicians who will use these methods. Controlled experimentation to determine the qualifications needed for effective use of projectives and the best methods of developing skill might result in important contributions to the securing of competent personnel for research and clinical work in personality measurement.

Within this stimulating field of scientific effort it is clear that there are sufficient major problems to absorb many more experimenters than are now available. Efficient means of communication to facilitate collaborative efforts, to reduce overlapping of research and to exchange descriptions of technique and findings become especially important. Psychological journals and societies

have been partially meeting this need in the past. The research committee of the Rorschach Institute serves as a clearing house for some of the research with this most important technique. The new *Journal of Projective Techniques* will help in the interchange of information. It is to be hoped that facilities for cooperation, especially on international lines, will keep pace with the growing importance of projective methods.

Every man is a volume if we know how to read him. To claim that projective techniques are teaching us how to read man would be presumptuous by failing to give due credit to the other methods that have promoted and are extending our knowledge of psychology. Among the psychological tools available for use, however, projectives are the most promising for speedy diagnosis of the total personality. With all their present deficiencies they have established for themselves a secure position in research and clinical study, and they have shown prospects of reaching a stature commensurate with the energy and time that have been and will be expended in their development.

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